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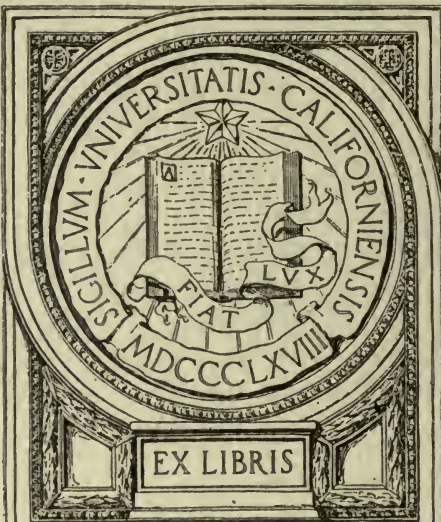
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HANDBOOK OF THE  
3.8-INCH GUN MATÉRIEL

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(ELEVEN PLATES)

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JANUARY 19, 1917



WASHINGTON  
GOVERNMENT PRINTING OFFICE  
1917





No. 1773

U. S. Ordnance dept.

HANDBOOK OF THE  
3.8-INCH GUN MATÉRIEL

(ELEVEN PLATES)

JANUARY 19, 1917



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MUSEUM  
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THE  
CITY OF  
NEW YORK

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WAR DEPARTMENT,  
OFFICE OF THE CHIEF OF ORDNANCE,  
*Washington, January 19, 1917.*

This manual is published for the information and government of the Regular Army and National Guard of the United States.

By order of the Secretary of War:

WILLIAM CROZIER,  
*Brigadier General, Chief of Ordnance.*

(3)



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LIST OF EQUIPMENT PERTAINING TO ONE 3.8-INCH GUN BATTERY ON WAR FOOTING.

No.	Equipment.	Property classification.	
		Class.	Section.
4	3.8-inch field guns, model of 1907.....	IV	3
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1	Store wagon, model of 1902.....		
1	Reel, 2-horse <sup>1</sup> .....	IV	8
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19	Sets of artillery harness (wheel).....		
1	Set, 2-horse reel, harness.....		
1	Set of pack harness <sup>2</sup> .....		

<sup>1</sup> The 2-horse reel will be issued when available and will carry the fire-control equipment, etc.  
<sup>2</sup> This temporary pack outfit is furnished to batteries for the purpose of carrying fire-control equipment until such time as type of 2-horse reel to be built for this purpose is available for issue to the batteries.

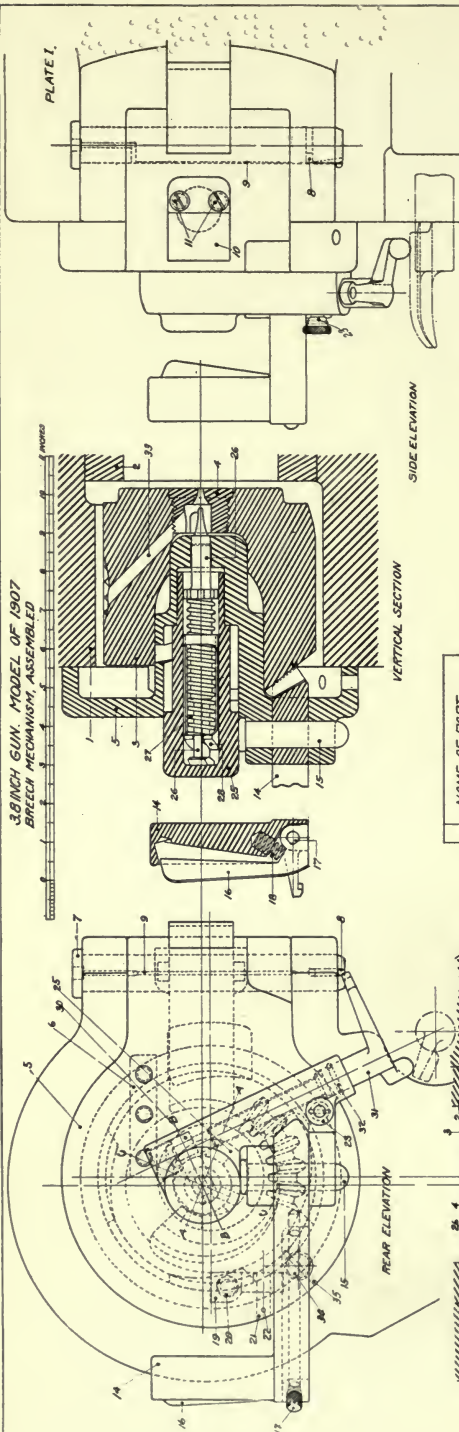


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6780 17



# 3.9 INCH GUN, MODEL OF 1907 BREACH MECHANISM, ASSEMBLED



NO.	NAME OF PART.
1	PLATE
2	ROCKET
3	ROCKET BLOCK
4	ROCKET STOP
5	ROCKET STOP
6	ROCKET STOP
7	ROCKET STOP
8	ROCKET STOP
9	ROCKET STOP
10	ROCKET STOP
11	ROCKET STOP
12	ROCKET STOP
13	ROCKET STOP
14	ROCKET STOP
15	ROCKET STOP
16	ROCKET STOP
17	ROCKET STOP
18	ROCKET STOP
19	ROCKET STOP
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26	ROCKET STOP
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31	ROCKET STOP
32	ROCKET STOP
33	ROCKET STOP

## HANDBOOK OF THE 3.8-INCH GUN MATÉRIEL.

### The 3.8-inch Field Gun, Model of 1907.

This pamphlet, together with O. O. Form No. 1659 (3-inch gun matériel), will be used for the 3.8-inch field gun, model of 1907. As the 3.8-inch field gun and its mechanism is practically identical with the 3-inch field gun, model of 1905, the information given in that pamphlet is equally applicable to the 3.8-inch gun. The differences are in the sizes of the pieces, types of extractors, and methods of firing, which are clearly shown in Plate I of this handbook.

### WEIGHTS, DIMENSIONS, AND GENERAL INFORMATION.

Weight.....	pounds..	1,535
Caliber.....	inches..	3.8
Total length.....	do....	111.25
Length of bore.....	do....	100
Length of rifled portion of bore.....	do....	91.47
Number of grooves.....		3
Width of grooves.....	inches..	0.2111
Depth of grooves.....	do....	0.03
Width of lands.....	do....	0.14
Twist right hand increasing 1 turn in fifty (50) at origin to 1 turn in twenty-five (25) at 13.47 inches from muzzle, thence uniform to muzzle.		
Weight of projectile, filled and fuzed.....	pounds..	30
Weight of powder charge.....	ounces..	48
Weight of cartridge case.....	pounds..	4.7
Capacity of cartridge case.....	cubic inches..	142.6
Muzzle velocity.....	feet per second..	1,700
Travel of projectile.....	inches..	93.73
Maximum pressure per square inch.....	pounds..	33,000
Range at 18° elevation.....	yards..	8,000

MUZZLE VELOCITY—1700 F. S.

Range table for the 3.8-inch gun.

SHELL AND SHRAPNEL, WEIGHT 30 POUNDS.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Range.	Angle of elevation.	$\Delta X$ for $\pm \Delta i$ elevation.	$\Delta X$ for $\pm \Delta 10$ F. S. M. V.	$\Delta X$ for wind 10 M. P. H.	$\Delta X$ for change of $\pm 1^\circ$ C.	Time of flight.	Fuze setting.	Drift.	Deflection for 10 miles cross wind.	Angle of departure.	Slope of fall.	Terminal velocity.	Maximum ordinate.	Values of "C."	Values of $\frac{1}{2} C$ fa.
Yards.	° ' "	Yards.	Yards.	Yards.	Yards.	Seconds.	Divs.	Mils.	Mils.	° ' "	1 on—	F. S.	Feet.		
100	—	16.9	1.0	0.19	0.5	0.18	0.2	2.0	0.1	5.7	607.4	1,674	0.15	—	—
200	—0 4 9	16.4	1.0	0.25	1.2	0.36	0.4	2.0	0.2	11.6	296.9	1,647	0.15	—	—
300	+0 11.0	15.9	3.0	0.29	2.0	0.73	0.7	2.2	0.3	17.7	191.0	1,619	1.22	—	—
400	0 17.3	15.4	4.0	0.35	2.9	0.94	0.9	2.2	0.4	24.0	138.0	1,590	2.19	—	—
500	0 23.8	14.9	4.9	0.40	4.0	1.02	1.1	2.2	0.5	30.5	106.8	1,560	3.46	—	—
600	0 30.4	14.5	5.8	0.53	5.2	1.12	1.4	2.3	0.6	37.1	86.4	1,530	5.06	—	—
700	0 37.3	14.1	6.8	0.72	6.5	1.32	1.7	2.4	0.7	44.0	71.8	1,499	7.02	—	—
800	0 44.3	13.8	7.7	0.99	7.9	1.52	2.0	2.4	0.8	51.0	61.0	1,467	9.36	—	—
900	0 51.5	13.5	8.6	1.19	9.4	1.73	2.4	2.5	0.9	58.2	52.6	1,434	12.09	—	—
1,000	0 58.9	13.2	9.5	1.52	11.0	1.95	2.7	2.5	1.0	65.6	46.0	1,399	15.00	2.03	1.0245
1,100	1 6.4	12.8	10.3	2.04	13.0	2.16	3.0	2.5	1.0	73.1	40.7	1,362	18	—	—
1,200	1 14.2	12.5	11.2	2.60	15.0	2.38	3.3	2.6	1.1	80.9	36.2	1,363	22	—	—
1,300	1 22.1	12.2	12.0	3.21	17.1	2.61	3.6	2.6	1.2	88.8	32.5	1,344	26	—	—
1,400	1 30.2	11.9	12.8	3.86	19.2	2.84	3.9	2.6	1.3	96.9	29.4	1,324	31	—	—
1,500	1 38.5	11.6	13.6	4.55	21.5	3.07	4.2	2.7	1.4	105.2	26.9	1,303	37	—	—
1,600	1 47.1	11.4	14.3	5.28	24.0	3.30	4.5	2.7	1.5	113.8	24.6	1,280	43	—	—
1,700	1 55.8	11.1	15.0	6.06	26.8	3.54	4.9	2.8	1.6	122.5	22.6	1,257	50	—	—
1,800	2 4.7	10.9	15.7	6.88	29.6	3.78	5.2	2.8	1.6	131.4	20.9	1,234	57	—	—
1,900	2 13.9	10.6	16.4	7.74	32.5	4.03	5.5	2.9	1.7	140.6	19.3	1,209	65	—	—
2,000	2 23.2	10.3	17.1	8.65	35.5	4.28	5.8	2.9	1.8	150.0	17.9	1,183	74	2.10	.9889
2,100	2 32.8	10.2	17.7	9.65	38.7	4.53	6.1	2.9	1.9	159.5	16.7	1,173	83	—	—
2,200	2 42.5	9.9	18.4	10.69	42.0	4.79	6.4	3.0	2.0	169.2	15.6	1,162	92	—	—
2,300	2 52.5	9.8	19.0	11.76	45.4	5.05	6.8	3.0	2.1	179.2	14.6	1,151	102	—	—
2,400	3 2.6	9.6	19.6	12.85	48.9	5.32	7.1	3.1	2.2	189.7	13.7	1,139	113	—	—
2,500	3 13.0	9.4	20.2	13.98	52.5	5.58	7.4	3.2	2.2	199.7	12.9	1,127	125	—	—
2,600	3 23.5	9.3	20.8	15.14	56.2	5.85	7.7	3.2	2.3	210.0	12.2	1,114	138	—	—
2,700	3 34.2	9.1	21.4	16.33	60.0	6.12	8.0	3.3	2.4	220.0	11.5	1,101	152	—	—
2,800	3 45.1	8.9	21.9	17.56	64.0	6.39	8.4	3.3	2.5	230.0	10.9	1,088	166	—	—
2,900	3 56.2	8.8	22.4	18.81	68.0	6.67	8.7	3.4	2.6	240.0	10.3	1,074	182	—	—
3,000	4 7.5	8.6	23.0	20.10	72.0	6.95	9.0	3.4	2.7	250.0	9.8	1,059	198	2.17	.9555
3,100	4 19.0	8.5	23.5	21.43	76.0	7.23	9.3	3.5	2.8	260.0	9.3	1,052	214	—	—
3,200	4 30.7	8.4	24.0	22.79	80.0	7.52	9.6	3.5	2.8	270.0	8.9	1,045	231	—	—
3,300	4 42.5	8.3	24.5	24.17	84.0	7.80	10.0	3.6	2.9	280.0	8.5	1,038	249	—	—
3,400	4 54.6	8.1	24.9	25.59	88.0	8.09	10.3	3.7	3.0	290.0	8.1	1,031	269	—	—



3,500.....	5	6.9	8.0	25.4	27.03	92.0	8.39	10.6	3.7	3.0	5	13.6	7.8	1,023	289	.....
3,600.....	5	19.4	7.9	25.8	28.50	96.0	8.68	10.9	3.8	3.1	5	26.0	7.4	1,016	310	.....
3,700.....	5	32.0	7.8	26.2	30.00	100.0	8.98	11.3	3.9	3.2	5	38.6	7.1	1,008	332	.....
3,800.....	5	44.8	7.7	26.7	31.53	104.5	9.28	11.6	4.0	3.3	5	51.4	6.8	999	356	.....
3,900.....	5	57.7	7.6	27.1	33.08	108.5	9.55	11.9	4.0	3.3	5	64.3	6.6	991	380	.....
4,000.....	6	10.9	7.5	27.5	34.66	112.5	9.88	12.3	4.1	3.4	6	17.5	6.3	982	405	2.25 .9250
4,100.....	6	24.1	7.4	27.8	36.25	116.6	10.19	12.6	4.2	3.5	6	30.8	6.1	977	431	.....
4,200.....	6	37.6	7.3	28.2	37.87	121.9	10.50	13.0	4.3	3.5	6	44.2	5.9	972	457	.....
4,300.....	6	51.2	7.2	28.6	39.52	125.0	10.81	13.3	4.4	3.6	6	57.8	5.7	967	485	.....
4,400.....	7	5.1	7.1	29.0	41.21	129.0	11.12	13.7	4.5	3.7	7	11.7	5.5	962	514	.....
4,500.....	7	19.2	7.0	29.4	42.93	133.0	11.44	14.0	4.6	3.7	7	25.0	5.3	956	545	.....
4,600.....	7	33.4	6.9	29.7	44.68	137.5	11.76	14.4	4.8	3.8	7	40.0	5.1	951	576	.....
4,700.....	7	47.9	6.8	30.0	46.46	142.0	12.08	14.7	4.9	3.9	7	54.5	4.9	945	609	.....
4,800.....	8	2.6	6.7	30.4	48.28	146.0	12.40	15.0	5.0	4.0	8	9.2	4.7	940	643	.....
4,900.....	8	17.5	6.6	30.7	50.14	150.0	12.73	15.4	5.2	4.0	8	24.1	4.6	934	679	.....
5,000.....	8	32.5	6.6	31.0	52.02	154.0	13.06	15.7	5.3	4.1	8	39.1	4.4	928	715	2.31 .8980
5,100.....	8	47.7	6.5	31.2	53.88	158.8	13.39	16.1	5.5	4.2	8	54.3	4.3	924	751	.....
5,200.....	9	3.0	6.4	31.5	55.79	163.0	13.73	16.5	5.7	4.2	9	9.6	4.2	920	789	.....
5,300.....	9	18.5	6.3	31.8	57.74	167.4	14.07	16.8	5.9	4.3	9	25.1	4.1	916	829	.....
5,400.....	9	34.2	6.2	32.1	59.74	171.6	14.41	17.2	6.2	4.4	9	41.0	3.9	911	870	.....
5,500.....	9	56.5	6.1	32.4	61.79	175.6	14.75	17.5	6.4	4.4	9	57.1	3.8	907	913	.....
5,600.....	10	6.8	6.0	32.7	63.89	180.0	15.10	17.9	6.6	4.5	10	13.4	3.7	903	957	.....
5,700.....	10	23.5	5.9	32.9	66.03	184.0	15.45	18.3	6.6	4.5	10	30.1	3.6	898	1,003	.....
5,800.....	10	40.4	5.8	33.2	68.21	188.2	15.80	18.6	6.7	4.6	10	47.0	3.5	893	1,051	.....
5,900.....	10	57.5	5.8	33.4	70.45	192.5	16.16	19.0	6.9	4.7	11	4.1	3.4	889	1,100	.....
6,000.....	11	14.8	5.7	33.6	72.73	196.8	16.52	19.4	7.0	4.7	11	21.4	3.3	884	1,151	2.37 .8775
6,100.....	11	32.2	5.7	33.9	75.03	201.0	16.88	19.7	7.3	4.8	11	38.8	3.2	881	1,210	.....
6,200.....	11	49.8	5.6	34.2	77.39	205.0	17.25	20.1	7.6	4.8	11	56.4	3.1	877	1,269	.....
6,300.....	12	7.8	5.5	34.4	79.80	209.5	17.62	20.5	7.9	4.9	12	14.4	3.0	874	1,329	.....
6,400.....	12	26.1	5.4	34.6	82.25	213.8	17.99	20.8	8.2	4.9	12	32.7	2.9	870	1,388	.....
6,500.....	12	44.8	5.3	34.8	84.77	218.0	18.37	21.2	8.5	5.0	12	51.4	2.9	867	1,448	.....
6,600.....	13	3.8	5.2	35.0	87.34	222.0	18.75	21.6	8.7	5.0	13	10.4	2.8	863	1,509	.....
6,700.....	13	23.2	5.1	35.2	89.95	226.0	19.14	22.0	9.0	5.1	13	29.8	2.7	860	1,569	.....
6,800.....	13	42.9	5.0	35.5	92.63	230.5	19.54	22.3	9.3	5.1	13	49.5	2.6	856	1,630	.....
6,900.....	14	2.9	4.9	35.7	95.35	234.6	19.94	22.7	9.5	5.2	14	9.5	2.6	852	1,690	.....
7,000.....	14	23.3	4.9	35.9	98.13	239.0	20.34	23.1	9.8	5.3	14	29.9	2.5	848	1,752	2.40 .8637
7,100.....	14	45.4	4.8	36.1	100.95	243.0	20.74	23.5	10.3	5.3	14	52.0	2.4	845	1,821	.....
7,200.....	15	7.5	4.7	36.3	103.84	247.0	21.15	23.9	10.8	5.4	15	14.1	2.4	843	1,883	.....
7,300.....	15	29.7	4.6	36.5	106.77	251.5	21.56	24.3	11.2	5.4	15	36.3	2.3	840	1,949	.....
7,400.....	15	51.9	4.5	36.7	109.76	255.5	21.98	24.6	11.7	5.5	15	58.5	2.3	837	2,017	.....
7,500.....	16	14.2	4.5	37.0	112.80	259.8	22.41	25.0	12.2	5.5	16	20.8	2.2	834	2,088	.....
7,600.....	16	36.5	4.4	37.2	115.89	264.0	22.84	25.4	12.7	5.6	16	43.1	2.1	831	2,162	.....
7,700.....	16	58.9	4.3	37.3	119.08	268.2	23.28	25.8	13.1	5.6	17	5.5	2.1	828	2,239	.....
7,800.....	17	21.3	4.2	37.5	122.43	272.5	23.73	26.2	13.6	5.7	17	27.9	2.0	825	2,389	.....
7,900.....	17	43.7	4.1	37.7	125.48	277.0	24.18	26.7	14.0	5.7	17	50.3	2.0	822	2,482	.....
8,000.....	18	6.2	4.0	38.0	128.78	281.0	24.64	27.1	14.4	5.8	18	12.8	1.9	819	2,577	2.43 .8551

## AMMUNITION.

[Plate II.]

Fixed ammunition is used in the 3.8-inch gun and is made up of either common shrapnel or common steel shell. The ammunition as made up varies slightly in length with the type of projectile used. The ammunition chests of the battery are of sufficient size to take either kind of ammunition furnished, so that the quantity of each class of ammunition to be carried is a matter to be regulated by proper authority. All fixed ammunition for the 3.8-inch gun is issued filled and fuzed. The weight of the projectile is 30 pounds and the total weight of the fixed ammunition, either shrapnel or shell, is 37.78 pounds.

A cast-iron shell has been designed having the same center of gravity and exterior dimensions as the common steel shell. This is used for proof and range firing only.

## THE CARTRIDGE CASE.

[Plate II.]

The cartridge case is a solid drawn case of cartridge brass having a capacity of approximately 142.6 cubic inches. The weight of the cartridge case with the 110-grain percussion primer is 4.78 pounds.

The base of the cartridge case is stamped with the name of the gun, initials of the place of manufacture, and the year of manufacture. The ammunition lot number is also stamped on the base of the cartridge case. A circular groove cut in the base of the cartridge case is painted yellow to indicate common shrapnel and black to indicate common steel shell, i. e., high explosive shell.

## THE PROPELLING CHARGE.

The propelling charge is composed of nitrocellulose powder, the granulation being cylindrical and having seven longitudinal perforations. The weight of the propelling charge varies slightly for different lots of powder and weighs approximately 48 ounces.

Smokeless powder must not be used for blank charges. For this purpose, the Ordnance Department furnishes a special powder.

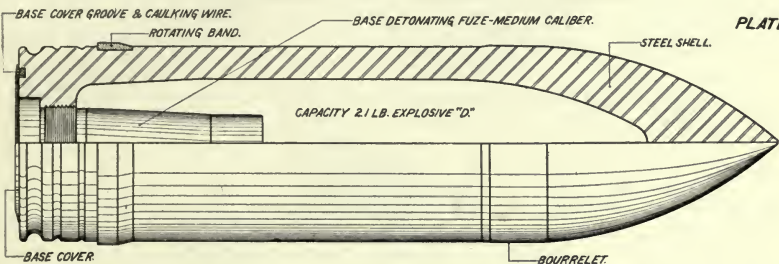
## PROJECTILES.

## COMMON STEEL SHELL.

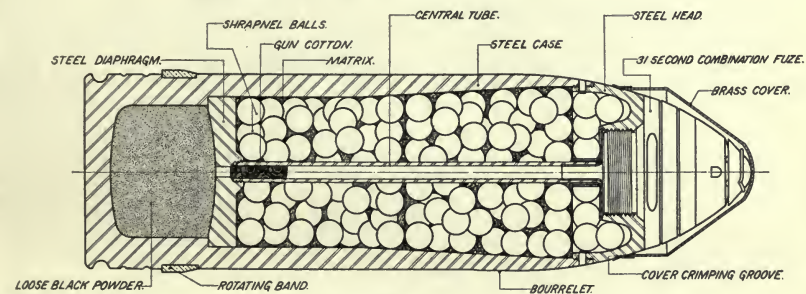
[Plate II.]

The common steel shell contains a bursting charge of 3.24 pounds of trinitrotoluol. The weight of the shell with the bursting charge, fuze, and base cover is 30 pounds with a small tolerance either way.

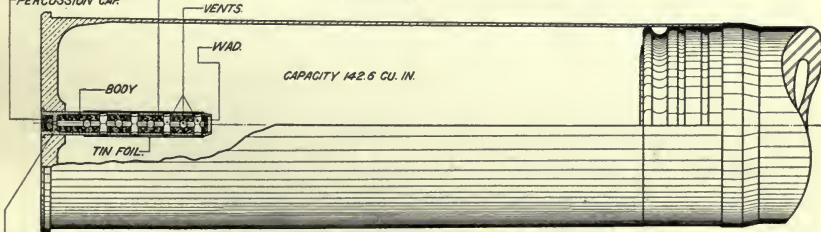




COMMON STEEL SHELL MODEL OF 1905



SHRAPNEL

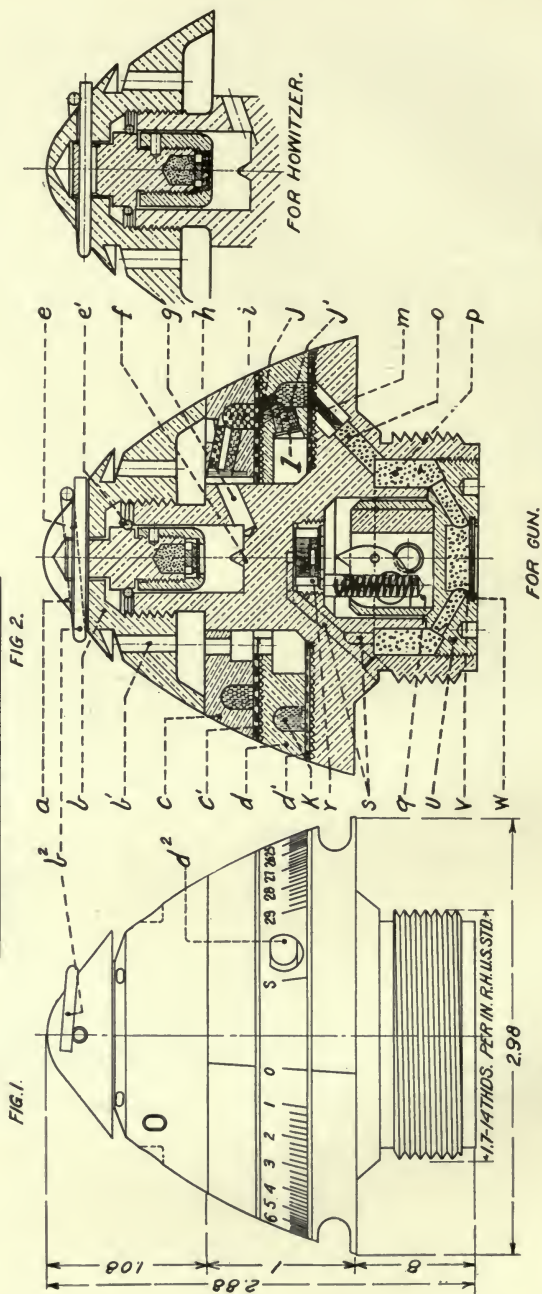


CARTRIDGE CASE

0 1 2 INCHES.

31 SECOND COMBINATION FUZE.

FIG. 2.



## COMMON SHRAPNEL.

[Plate II.]

The shrapnel is a base charged common shrapnel fitted with a 31-second combination fuze. The shrapnel filling is composed of 369 balls, each approximately 230 grains in weight. The balls are approximately 0.54 inch in diameter. The interstices contain a smoke-producing matrix.

All shrapnel ammunition is issued fuze all ready for use and provided with a waterproof hood over the fuze to exclude moisture.

## FRANKFORD ARSENAL COMBINATION FUZE, 31-SEC. MODEL OF 1907 M.

[Plate III.]

This fuze consists of the following parts, assembled as shown in the drawing:

- |  |  |
|--|--|
| <i>a</i> Body, bronze.   | <i>j</i> Compressed-powder pellet in vent leading to lower time train.   |
| <i>b</i> Closing cap, brass.   | <i>j</i> <sup>1</sup> Compressed-powder pellet in lower time-train vent. |
| <i>b</i> <sup>1</sup> Vents in closing cap.                              | <i>k</i> Lower time train, compressed powder.                            |
| <i>b</i> <sup>2</sup> Safety wire.                                       | <i>l</i> Brass disk, crimped in place.                                   |
| <i>c</i> Upper time-train ring, Tobin bronze.                            | <i>m</i> Compressed-powder pellet in vent <i>o</i> .                     |
| <i>c</i> <sup>1</sup> Washer for time-train ring, graduated, felt cloth. | <i>o</i> Vent leading to magazine.                                       |
| <i>d</i> Time-train ring, graduated, Tobin bronze.                       | <i>p</i> Powder magazine.  |
| <i>d</i> <sup>1</sup> Washer for body, felt cloth.                       | <i>q</i> Percussion plunger.   |
| <i>d</i> <sup>2</sup> Rotating pin, brass.                               | <i>r</i> Percussion primer.  |
| <i>e</i> Concussion plunger.   | <i>s</i> Vents leading from percussion primer to magazine.               |
| <i>e</i> <sup>1</sup> Concussion-resistance ring, brass.                 | <i>u</i> Bottom closing screw, brass.                                    |
| <i>f</i> Firing pin, brass.  | <i>v</i> Washer for closing screw, muslin.                               |
| <i>g</i> Vent leading to upper time train.                               | <i>w</i> Washer for closing screw, brass.                                |
| <i>h</i> Compressed-powder pellet.                                       | <i>x</i> Pins, brass.  |
| <i>i</i> Upper time train, compressed powder.                            |  |

The action of this fuze is similar to that of the 21-second fuze used with the 3-inch field gun. The principal difference is in the length of the time train, and graduations of the time-train ring.

## ALLOWANCE OF AMMUNITION.

Shell and shrapnel ammunition is issued by the Ordnance Department in moisture-proof zinc-lined wooden packing boxes, two rounds per box.

The annual allowance of ammunition for the instruction of field artillery is prescribed from time to time in War Department orders.



## BLANK AMMUNITION.

Blank metallic ammunition consists of the following components:

A brass cartridge case, a percussion primer, a charge of black powder, and a tight-fitting felt wad.

## THE CHARGE.

The charge to be used in the preparation of blank metallic ammunition for the 3.8-inch gun is 1.75 pounds of saluting powder.

## PREPARATION OF BLANK METALLIC AMMUNITION.

Blank metallic ammunition will be assembled at posts, the same as for 3-inch field guns, or in the field under the supervision of a commissioned officer, who will be held responsible that it is prepared in the manner prescribed.

## FLASH TARGETS.

Flash-target apparatus is issued for use with the 3.8-inch gun as well as other targets. For detailed information in this connection, see Ordnance pamphlet No. 1994.

## 3.8-INCH GUN—DRILL CARTRIDGE.

The drill cartridge is a dummy cartridge for use in drilling cannoneers in the service of the gun.

The principal parts are, wood body, bronze base, body guard, split pin, graduated ring, point nut, and bolt extending through the entire length.

It is the shape of the service shrapnel ammunition and is fitted at the point with a movable ring, graduated the same as the ring upon the F. A. 31-second combination fuze. This arrangement is for the instruction of the cannoneers in fuze setting. No caliber .30 subcaliber cartridge is to be used in the 3.8-inch field gun.

There has been developed a 1.457-inch subcaliber gun for use in mobile guns and howitzers when fitted with its proper adaptors. This gun is to fire a 1.7-pound smoke shell.

## THE HAND FUZE SETTER MODEL OF 1913.

[Plate IV.]

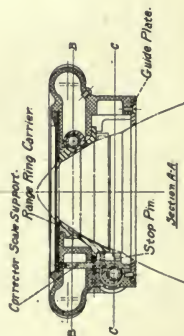
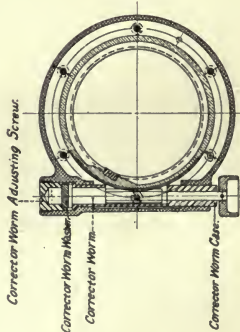
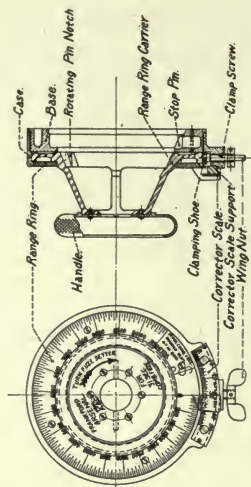
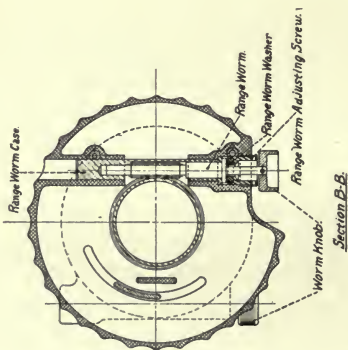
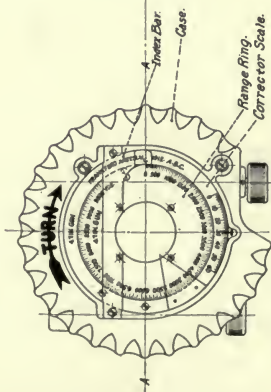
## DESCRIPTION.

The fuze setter is a device provided for the rapid and accurate setting of fuzes.

The hand fuze setter provided for the 3.8-inch gun consists principally of an aluminum case having a serrated rim forming a handle for turning; a range ring mounted on the range-ring carrier, which







Hand Fuse Setter. (Old Model).

is operated by the knob on the range worm; a corrector scale mounted on the corrector-scale support, which is operated by the knob on the corrector worm, and a guide plate which rests on the projectile.

A slot is cut in the range-ring carrier which engages with the pin on the graduated time-train ring of the fuze. A stop pin is attached to the corrector-scale support and engages with the stop pin of the fuze to limit the motion of the fuze setter.

The range worm and corrector worm are mounted eccentrically in the range-worm case and the corrector-worm case. Upon rotation this provides an adjustment to accommodate slight variations in machine operations and to take up for wear between the teeth of the worms and gears.

The range-worm adjusting screw and the corrector-worm adjusting screw have fiber washers fitted in the end which bear on the collar of the range and corrector worms for taking up the end motion and to provide sufficient friction to resist accidental turning.

Clamp plugs are provided for locking the range and corrector-worm cases and the range worm and corrector worm adjusting screws.

#### OPERATION.

Turn the knob of the corrector worm until the index on the case registers with the line on the corrector scale, which indicates the desired correction for height of burst.

To set a fuze, remove the waterproof cap and safety wire. Place the hand fuze setter over the fuze and turn until the slot in the range-ring carrier engages with the pin on the graduated time-train ring of the fuze; the base plate and the upper part of the range-ring carrier will then bear firmly on the projectile; then turn the fuze setter in a clockwise direction as indicated by the arrow on the top of the case until the stop pin on the corrector-scale support engages with the stop pin on the fuze, and further motion is prevented.

An index to register with a line on the fuze to indicate when the stop pin on the fuze and fuze setter are in contact is attached to the corrector scale.

#### HAND FUZE SETTER.

[Plate IV.]

#### OLD MODEL.

This hand fuze setter consists of the following principal parts: Range-ring carrier, base, case, range ring, corrector scale, plunger, plunger spring, clamping shoe, and clamp screw.

On the top of the base is mounted the range-ring carrier to which is secured by four screws the graduated range ring. On the interior

conical surface of the carrier is cut a notch, which engages the fixed pin of the graduated time-train ring of the fuze.

The range-ring carrier is loosely mounted on top of the base and is held in place by means of the case in such manner that it can be freely revolved so that the desired relation between the time train-ring notch cut therein and the fixed plunger in the base may be readily obtained for the desired setting of the fuze.

In the case which is securely fixed to the base is fitted a clamping screw and shoe, by means of which the range-ring carrier with its graduated range ring may be securely clamped. On the top surface of the case is fitted the corrector scale; this is held in place by two screws. If after a setting has been made for a given range it is found that the shrapnel does not burst at the desired point in its trajectory, the clamping screw is released and the range-ring carrier is revolved forward or backward as desired until the graduation mark on the range ring comes opposite the proper graduation mark on the corrector scale. For making the adjustment for different heights of burst, the corrector scale has been graduated and fitted to the case in such manner that if a lower point of burst is desired the range graduation on the range ring should be set to one of the lesser graduation marks on the corrector scale, and if a higher point of burst is desired, then the graduation on the range ring should be set to one of the higher graduations on the corrector scale.

#### ADJUSTMENT.

As the parts are adjusted by the manufacturer before issue and ample provision made for lubricating the parts by filling the interior of the case with a heavy grease, there should be but little need for adjustment for a long time.

Two oil holes closed by screws are provided in the case for emergency use only.

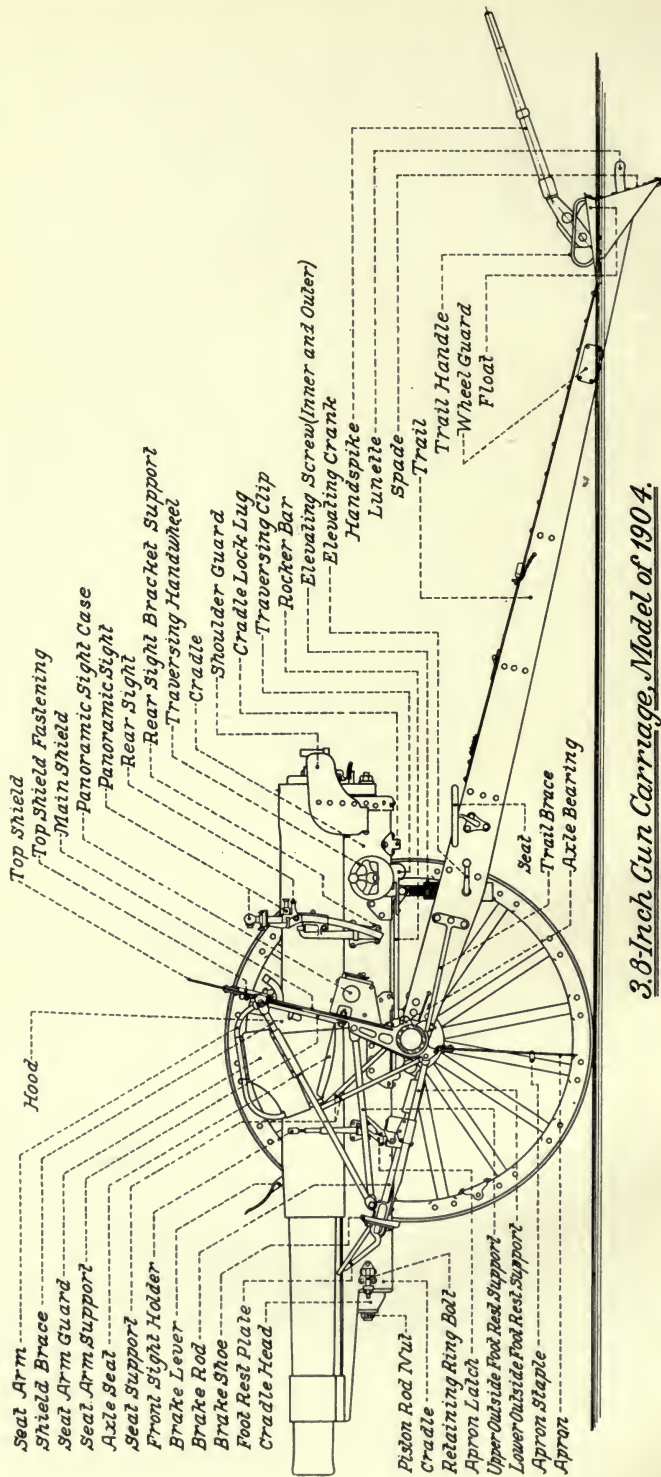
Reference marks are placed on the case and worm cases to indicate the normal adjustment.

#### ADAPTABILITY TO OTHER GUNS.

This fuze setter is adaptable to all projectiles using the 31-second combination fuze by using suitable range ring, corrector scale, guide plate, and index bar. The corrector scale for guns has 60 graduations, 30 being the normal. The range ring for guns has but one scale graduated thereon. The index bar for guns has a fixed projecting arm on which the index is engraved. The guide plates are suitably marked for the projectile to which they are fitted. The range rings and corrector scales are marked with the name of gun.







*3.8-Inch Gun Carriage, Model of 1904.*

*Side Elevation [Left Wheel Removed]*

Scale 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 72 76 80 84 88 92 96 100 104 108 112 116 Inches



## The 3.8-inch Gun Carriage, Model of 1904.

## WEIGHTS, PRINCIPAL DIMENSIONS, ETC.

Weight of carriage, complete.....	pounds..	2,337
Weight of gun and carriage, complete.....	do.....	3,875
Weight at end of trail, carriage limbered.....	do.....	195
Diameter of wheels.....	inches..	58
Width of track.....	do.....	60
Length of recoil of gun on carriage.....	do.....	58.5
Height of axis of gun.....	do.....	44.567
Height of line of peep sight.....	do.....	47.068
Length of peep sight radius.....	do.....	36.75
Maximum angle of elevation.....	degrees..	15.5
Maximum angle of depression.....	do.....	5
Amount of traverse of gun on carriage.....	mils..	106

*Nomenclature of parts of carriage (complete).*

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
1	Axle.....		IV	3
1	Trail, consisting of—			
2	Flasks (right and left).....	Form right and left side of trail.....		
2	Axle bearings (right and left).....	Riveted to front ends of flasks.....		
1	Axle bushing, right.....	In right axle bearing.....		
1	Axle bushing, left.....	In left axle bearing.....		
2	Axle-bearing bolts.....	Clamp bearings to axle.....		
1	Elevating gear transom.....	Riveted between flasks.....		
1	Consisting of—			
1	Transom, front.....	Forms front of elevating gear transom.....		
1	Transom, rear.....	Forms rear of elevating gear transom.....		
2	Transom bearings.....	In cross transoms.....		
2	Elevating gear cross transoms.....	Between front and rear transoms.....		
1	Transom, intermediate.....	Riveted between flasks.....		
8	Bolts for elevating gear transom.....	Hold cross transoms in place.....		
1	Tool box.....	Riveted between flasks.....		
1	Consisting of—			
1	Tool box transom, front.....	do.....		
1	Tool box transom, rear.....	do.....		
1	Tool box bottom.....	Tool box in trail.....		
1	Tool box lid.....	Hinged to tool box cover.....		
1	Tool box cover.....	Forms top of tool box.....		
1	Tool box fastening.....	Fastened to lid and rear transom.....		
1	Consisting of—			
1	Handle.....	At rear of tool box lid.....		
2	Handle lugs.....	Riveted to rear tool box transom.....		
2	Handle springs.....	Riveted to tool box cover.....		
2	Hinge, male.....	Riveted to tool box lid.....		
2	Hinge, female.....	Riveted to tool box cover.....		
1	Handle guide rivet.....	Riveted to tool box lid.....		
1	Handle stop rivet.....	do.....		
1	Lock eye.....	Riveted to trail cover.....		
1	Rear sight box bottom.....	Forms bottom of rear sight box.....		
1	Rear sight shank packing No. 1.....	Fastened to rear sight box bottom.....		
1	Rear sight shank packing No. 2.....	Fastened to rear sight box cover.....		
1	Rear sight shank packing No. 3.....	Fastened to rear sight box bottom.....		
1	Rear sight shank packing No. 4.....	Fastened to rear sight box cover.....		
1	Rear sight shank packing No. 5.....	Fastened to rear sight box bottom.....		
1	Lock chain rivet with chain.....	Riveted to left flask.....		
4	Carriage bolts with nuts and washers.....	2 for packing No. 3; 2 for packing No. 5.....		
1	Wheel guard transom.....	Riveted between flasks at rear end of rear sight box.....		
1	Spade.....	Riveted to ends of flasks.....		
1	Spade edge.....	Riveted to face of spade.....		
1	Float.....	Riveted to spade and flasks.....		
1	Float brace.....	Riveted to bottom of trail and float.....		

## Nomenclature of parts of carriage (complete)—Continued.

No.	Name of part	Location.	Property classification.	
			Class.	Section.
	Trail, consisting of—Continued.			
1	Lunette bracket.....	Riveted to float.....		
1	Handspike fastening.....	Riveted to top of float.....		
2	Wheel guards.....	Riveted to flasks and wheel guard transom.....		
1	Trail brace, right.....	Right flask to right seat axle bracket.....		
1	Trail brace, left.....	Left flask to left seat axle bracket.....		
1	Trail cover.....	Riveted to flasks and front tool box transom.....		
1	Trail handle, right.....	Riveted on float and spade.....		
1	Trail handle, left.....	do.....		
1	Seat bracket, right.....	Riveted to right flask.....		
1	Seat bracket, left.....	Riveted to left flask.....		
2	Seats.....	Riveted to seat brackets.....		
1	Elevating and traversing lock, consisting of—			
1	Cradle lock bracket.....	Riveted to elevating gear transom, rear.....		
1	Hook.....	Pinned to cradle lock bracket.....		
1	Hook center.....	Riveted to hook.....		
1	Link.....	Pinned to hook center.....		
2	Link pins.....	For link.....		
1	Cradle lock spring.....	Pinned to bracket and link.....		
1	Cradle lock pin.....	Pins hook and hook center to bracket.....		
2	Long spring pins.....	1 for spring; 1 for spring stop.....		
1	Cradle lock bracket pin.....	Riveted in bracket for spring stop.....		
1	Sponge staff socket.....	Riveted to right flask.....		
1	Sponge staff stop.....	do.....		
1	Sponge fastening.....	do.....		
	Consisting of—			
1	Hasp.....	Pinned to fastening.....		
1	Bolt.....	On sponge fastening.....		
1	Twisted coil chain.....	Attached to bolt.....		
1	Pin.....	On sponge fastening.....		
1	Name plate.....	Riveted on top of tool box cover.....		
1	Handspike.....	Carried on trail cover.....		
1	Handspike bolt.....	Secures handspike to fulcrum.....		
1	Handspike bracket.....	Riveted to float.....		
1	Handspike fastening.....	On trail cover.....		
1	Handspike fastening spring.....	Holds fastening to trail cover.....		
1	Lunette with nut.....	In lunette bracket.....		
1	Padlock.....	Fastened to chain on left flask.....		
1	Bolt snap.....	do.....		
1	Padlock chain rivet.....	For securing chain to left flask.....		
	Cradle, consisting of—			
1	Angle, right.....	Riveted to right side of body.....		
1	Angle, left.....	Riveted to left side of body.....		
1	Cradle body.....	Below gun.....		
1	Cradle rear end.....	Riveted to body.....		
1	Cradle reinforce plate.....	Riveted to rear end.....		
1	Cradle washer.....	Between rear end and reinforce plate.....		
1	Guide liner, right.....	Riveted to body and top plate.....		
1	Guide liner, left.....	do.....		
1	Cradle top plate.....	Riveted to angles and body.....		
1	Cradle head.....	In retaining ring.....		
	Consisting of—			
1	Special screw.....	In cradle head.....		
1	Cradle head stop.....	In retaining ring.....		
1	Cradle head stop plug.....	do.....		
1	Cradle head stop spring.....	do.....		
1	Bushing.....	In cradle head.....		
1	Retaining-ring pin.....	In retaining ring.....		
1	Pintle.....	Riveted to cradle body.....		
2	Oil tubes.....	In pintle.....		
1	Cradle-lock lug.....	Riveted to cradle body near rear end.....		
1	Bracket seat, firing handle.....	Riveted to cradle body.....		
1	Recoil-indicator guide.....	Riveted on right side of body.....		
1	Quadrant fastening.....	do.....		
2	Shoulder-guard fastenings.....	Riveted on left side of body.....		
1	Shoulder-guard clip.....	do.....		
1	Shoulder-guard brace.....	Secures shoulder guard to cradle.....		
1	Rear-sight bracket support.....	Riveted on left side of body.....		
1	Front-sight bracket support.....	do.....		
2	Retaining-ring bolt fastenings.....	Riveted to cradle body.....		
1	Spring-support guide, right.....	Riveted inside cradle.....		
1	Spring-support guide, left.....	do.....		
2	Retaining-ring bolts with nuts.....	In bolt fastenings.....		
2	Retaining-ring bolt pins.....	do.....		

IV

3

## Nomenclature of parts of carriage (complete)—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
1	Shoulder guard.....	On rear end of cradle.....	IV	3
1	Shoulder-guard pin.....	Secures shoulder guard to cradle.....		
1	Shoulder-guard bushing.....	Brazed in shoulder guard.....		
1	Dust guard.....	On cradle guide liners.....		
1	Cradle brush.....	Riveted to dust guard.....		
	Consisting of—			
1	Brush plate.....	Part of cradle brush.....		
1	Rear felt plate.....	do.....		
1	Front felt plate.....	do.....		
1	Recoil indicator.....	In indicator guide.....		
	Consisting of—			
1	Spring.....	Riveted to slide.....		
1	Slide.....	In guide.....		
1	Recoil-indicator throw.....	Attached to hinge.....		
1	Recoil-indicator pointer.....	Riveted to indicator slide.....		
1	Recoil-indicator hinge pin.....	For hinge.....		
1	Recoil-indicator hinge.....	Riveted to dust guard.....		
1	Firing mechanism, consisting of—			
1	Firing-shaft bracket.....	Bolted to bracket seat.....		
1	Firing shaft.....	In bracket.....		
1	Firing-handle hub.....	On end of firing shaft.....		
1	Firing handle.....	Assembled to firing-handle hub.....		
	Consisting of—			
1	Plunger.....	In handle.....		
1	Spring.....	do.....		
1	Firing-shaft bracket pin.....	In bracket.....		
1	Shaft-trip collar.....	On end of firing shaft.....		
1	Trip latch.....	Secured to trip-latch plunger.....		
1	Trip-latch plunger.....	In firing-handle hub.....		
1	Trip-latch spring.....	On trip-latch plunger.....		
1	Trip-latch pin.....	Secures trip latch.....		
1	Trip-collar pin.....	Fastens trip collar on shaft.....		
1	Handle-return spring.....	Front end of bracket.....		
1	Shaft-return spring.....	Rear end of bracket.....		
1	Adjusting screw.....	In bracket.....		
1	Adjusting-screw check nut.....	On adjusting screw.....		
2	Bracket studs and nuts.....	For attaching bracket.....		
1	Cylinder.....	In cradle.....		
1	Cylinder-end stud.....	Connects cylinder to gun.....		
1	Cylinder-end stud nut.....	On cylinder-end stud.....		
1	Screw for cylinder end.....	Prevents cylinder end from unscrewing.....		
1	Counter-recoil buffer.....	Screwed and pinned on cylinder-end stud.....		
1	Cylinder head.....	Front end of cylinder.....		
3	Cylinder-head screw eyes.....	Cylinder head.....		
1	Cylinder-head washer.....	In cylinder head.....		
1	Gland.....	Screwed on head.....		
1	Stirrup.....	Inside of cradle.....		
1	Front-spring support.....	Front end of stirrup.....		
1	Rear-spring support.....	Rear end of stirrup.....		
3	Outer counter-recoil springs.....	Outside of stirrup.....		
3	Inner counter-recoil springs.....	Inside of stirrup.....		
2	Spring separators, inner.....	Separate inner springs.....		
2	Spring separators, outer.....	Separate outer springs.....		
1	Cylinder support.....	Inside of front end of stirrup.....		
5	Rings, packing.....	Garlock hydraulic waterproof, 0.25 inch square.....		
1	Piston.....	At rear end of piston rod.....		
1	Piston rod.....	In cylinder.....		
1	Piston-rod plug.....	do.....		
1	Piston-rod nut.....	At front end of piston rod.....		
1	Filling plug with gasket.....	Screwed in end of piston rod.....		
1	Vent plug.....	In cylinder head.....		
1	Vent-plug washer.....	do.....		
3	Piston-retaining screws.....	Secure piston to rod.....		
1	Piston-rod plug pin.....	Fastens plug in piston rod.....		
1	Rocker, consisting of—			
1	Pintle socket.....	On axle.....		
1	Pintle bushing.....	Upper surface of socket.....		
2	Rocker bars.....	From pintle socket to traversing clip.....		
1	Pintle-socket front clip liner.....	Riveted to front clip.....		
1	Pintle-socket rear clip liner.....	Riveted to rear clip.....		
1	Pintle-socket side clip liner, right.....	Riveted to right-side clip.....		
1	Pintle-socket side clip liner, left.....	Riveted to left-side clip.....		
1	Traversing plate liner pin.....	Supports one end of liner.....		
1	Traversing plate.....	Riveted to cradle body.....		
1	Traversing-plate liner.....	Pinned and screwed to traversing plate.....		



## Nomenclature of parts of carriage (complete)—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
	Rocker, consisting of—Continued.			
1	Azimuth pointer.....	Traversing plate.....		
1	Dowel for azimuth pointer.....			
2	Azimuth-pointer screws.....	Secure pointer to traversing plate.....		
1	Traversing-plate liner screw.....	Attaches traversing-plate liner.....		
1	Traversing mechanism, consisting of—			
1	Handwheel.....	On worm shaft.....		
1	Handle.....	On handwheel.....		
1	Spindle.....	Through handle.....		
1	Traversing worm shaft.....	In bearing on traversing clip.....		
1	Nut.....	On worm shaft.....		
1	Traversing upper bushing pin.....	Secures upper bushing.....		
1	Traversing clip.....	Riveted to rocker bars.....		
1	Traversing clip upper bushing.....	In upper end of bearing.....		
1	Traversing clip, lower bushing.....	In lower end of bearing.....		
1	Traversing stop pin.....	On traversing clip.....		
1	Azimuth scale.....	do.....		
1	Azimuth scale screw No. 1.....	Secures scale to traversing clip.....		
1	Azimuth scale screw No. 2.....	do.....		
1	Elevating mechanism, consisting of—			
1	Elevating pin.....	Through elevating screw and traversing clip.....		
1	Innerelevatingscrew.....	Between rocker and outerelevatingscrew.....		
1	Outer elevating screw.....	Between inner elevating screw and elevating gear bracket.....		
1	Ring, brass.....			
1	Elevating gear bracket.....	On bearing in trail transoms.....		
1	Elevating bevel gear.....	In elevating gear bracket.....		
4	Elevating gear bronze bushings.....	In bracket.....		
2	Elevating gear keys.....	Riveted in bevel gear.....		
2	Elevating crank handles.....	On elevating cranks.....		
2	Washers.....	For handles.....		
2	Elevating bevel pinions.....	One on end of each crank shaft.....		
2	Elevating bevel pinion taper pins.....	Secure pinions to crank shafts.....		
1	Elevating crank shaft, right.....	Through right flask.....		
1	Elevating crank shaft, left.....	Through left flask.....		
1	Elevating screws, dust guard.....	Lower end of bracket.....		
1	Dust-guard screw.....	Secures dust guard.....		
2	Axle seats and foot rests, consisting of—		IV	3
1	Seat, right.....			
1	Seat, left.....			
1	Seat support, right.....	Supports right seat.....		
1	Seat support, left.....	Supports left seat.....		
1	Seat-axle bracket, right.....	Upper right end of main shield.....		
1	Seat-axle bracket, left.....	Upper left end of main shield.....		
1	Seat arm, right.....	Riveted to right seat arm bracket.....		
1	Seat arm, left.....	Riveted to left seat arm bracket.....		
1	Seat-arm guard, right.....	Fastened to right seat arm.....		
1	Seat-arm guard, left.....	Fastened to left seat arm.....		
1	Seat-arm connection, right.....	Riveted to right seat.....		
1	Seat-arm, connection, left.....	Riveted to left seat.....		
6	Seat-filler pieces.....	Front of seat.....		
2	Seat stiffeners.....	Riveted to rear edge of seats.....		
2	Seat-arm supports.....	Support rear ends of seat arms.....		
1	Seat-support connection, right.....	Bolted to right axle bracket.....		
1	Seat-support connection, left.....	Bolted to left axle bracket.....		
2	Seat-support connection bolts.....	For seat-support connections.....		
2	Shield brace bolts with nuts.....	Secure shield brace to shield bracket.....		
1	Diagonal brace (rear end inside) right.....	For right seat.....		
1	Diagonal brace (rear end inside) left.....	For left seat.....		
1	Diagonal brace (rear end outside) right.....	For right seat.....		
1	Diagonal brace (rear end outside) left.....	For left seat.....		
1	Foot-rest frame, right.....	Fastened to right foot rest supports.....		
1	Foot-rest frame, left.....	Fastened to left foot-rest supports.....		
1	Foot-rest plate, right.....	On foot-rest frame, right.....		
1	Foot-rest plate, left.....	On foot-rest frame, left.....		
2	Foot-rest plate attachment, right.....	Attaches foot-rest plate.....		
2	Foot-rest plate attachment, left.....	do.....		
2	Seat-axle bracket bolts with nuts.....	Secure brackets to axle.....		
2	Foot-rest bolts, inside, with nuts.....	Secure foot-rest supports to axle bearing.....		
2	Foot-rest bolts, outside, with nuts.....	Secure foot-rest supports to seat-axle bracket.....		
4	Foot-rest support bolts with nuts.....	Secure supports to foot-rest frames.....		
2	Upper inside foot-rest support.....	From axle bearings to foot-rest frames.....		
2	Upper outside foot-rest support.....	From seat-axle brackets to foot-rest frames.....		

## Nomenclature of parts of carriage (complete)—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
	Axle seats and foot rests, consisting of—			
	Continued.			
1	Lower inside foot-rest support, right..	From axle bearing to foot-rest frame.....		
1	Lower inside foot-rest support, left..	do.....		
1	Lower outside foot-rest support, right..	From seat axle bracket to foot-rest frame.....		
1	Lower outside foot-rest support, left..	do.....		
2	Inside foot-rest support pin.....	Fastens upper inside supports to axle bearing.		
2	Outside foot-rest support pin.....	Fastens upper outside supports to seat axle brackets.		
2	Foot-rest braces.....	Brace foot-rest plates.....		
1	Road brake, consisting of—			
1	Brake beam, right.....	Pivoted to right foot-rest frame.....		
1	Brake beam, left.....	Pivoted to left foot-rest frame.....		
2	Brake-beam pin.....	Foot-rest frames.....		
1	Brake-lever hinge pin.....	Pinned in brake lever hinge.....		
1	Brake-axle bracket bushing ( $A=3.2$ )..	For right bracket.....		
1	Brake-axle bracket bushing ( $A=1.5$ )..	For left bracket.....		
3	Brake-axle bracket bolt.....	Secures bracket to axle.....		
3	Brake-axle bracket-bolt nuts.....	For bolts.....		
1	Brake axle bracket.....	Bolted to axle.....		
1	Segment rack.....	Riveted to brake segment.....		
1	Brake-lever hinge.....	On rock shaft.....		
1	Brake-lever spring.....	On brake-lever hinge pin.....		
1	Brake-lever stop.....	Riveted near bottom of brake segment.....		
1	Brake pawl.....	Pinned to brake-lever hinge.....		
1	Brake segment.....	Riveted to brake-axle bracket.....		
2	Connecting-rod ends.....	On ends of brake rods.....		
4	Connecting-rod pins.....	Connect ends to brake beams.....		
1	Rock shaft.....	In bearings bolted to axle.....		
1	Rock-shaft bracket.....	Bolted to axle.....		
1	Key, steel.....	Rock shaft.....		
1	Key, steel.....	On brake rods.....		
2	Brake shoes.....	Ends of brake beams.....		
4	Brake-shoe tap bolts.....	Secure shoes to beams.....		
2	Brake rods.....	Between brake-rod ends and springs.....		
2	Springs.....	Inside of spring cover.....		
2	Spring covers.....	Ends of brake rods.....		
2	Spring-cover heads.....	Slide on brake rod.....		
1	Brake crank.....	On end of brake shaft.....		
1	Brake lever.....	do.....		
2	Apron latches, consisting of—			
2	Apron-latch bracket.....	On apron-latch bridge.....		
2	Apron-latch pin.....	Form pivot for apron-latch body.....		
2	Apron-latch body.....	Pivoted on block.....		
2	Apron-latch lever.....	Pivoted on bodies.....		
2	Apron-latch lever pin.....			
2	Apron-latch plunger.....	Seated in bodies.....		
2	Plunger eye.....	Screwed on end of plunger.....		
2	Plunger-eye pin.....	Attach plunger eye to lever.....		
2	Apron-latch spring.....	In body around plunger.....		
2	Apron-latch bushing.....	Screwed into body.....		
1	Apron-latch bridge, right.....	Fastened to clasps.....		
1	Apron-latch bridge, left.....	do.....		
4	Apron-latch bridge clasp.....	Around foot-rest supports.....		
1	Apron shield, consisting of—			
1	Apron.....	Hinged to axle bearings and axle-seat bracket.		
4	Apron hinges.....	Riveted to apron.....		
4	Apron-hinge pin.....	Through apron hinges and brackets.....		
2	Apron-latch staples.....	Riveted to apron.....		
1	Main shield, consisting of—			
1	Main shield.....	Bolted to axle bearings and axle-seat bracket.		
1	Hood.....	Riveted to main shield.....		
1	Hood angle.....	Riveted to hood.....		
1	Shutter, peep-sight port.....	Hinged to shield.....		
1	Shutter, panoramic-sight port.....	do.....		
1	Shutter support.....	Riveted to shutter.....		
1	Shutter-latch base.....	do.....		
1	Shutter-latch plunger.....	In shutter-latch base.....		
1	Shutter-latch spring.....	do.....		
6	Hinge, sight-port shutter.....	On shield.....		
1	Hinge pin, sight-port shutter.....	In hinges.....		
2	Filler, shutter hinge.....	Between hinge and shield.....		
1	Shutter latch plunger nut.....			

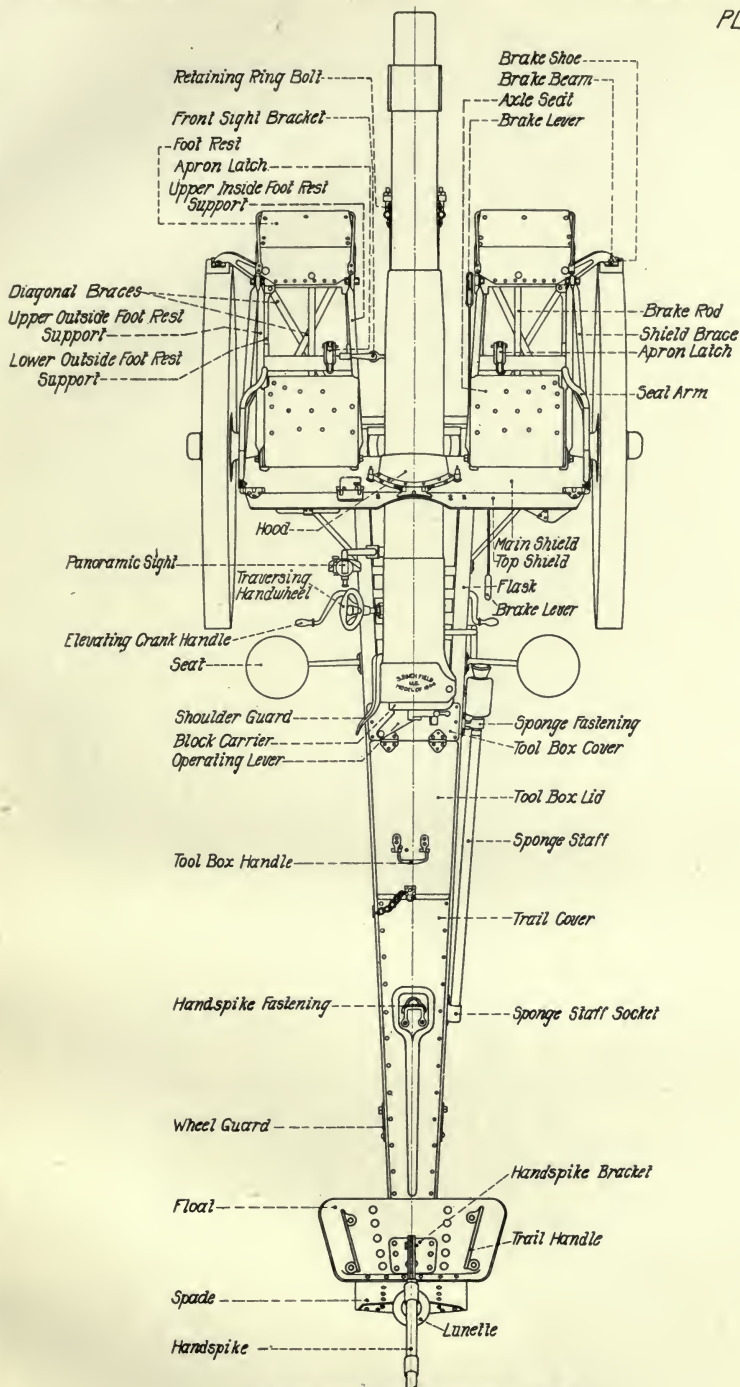
IV

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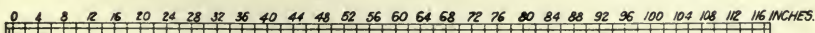
## Nomenclature of parts of carriage (complete)—Continued.

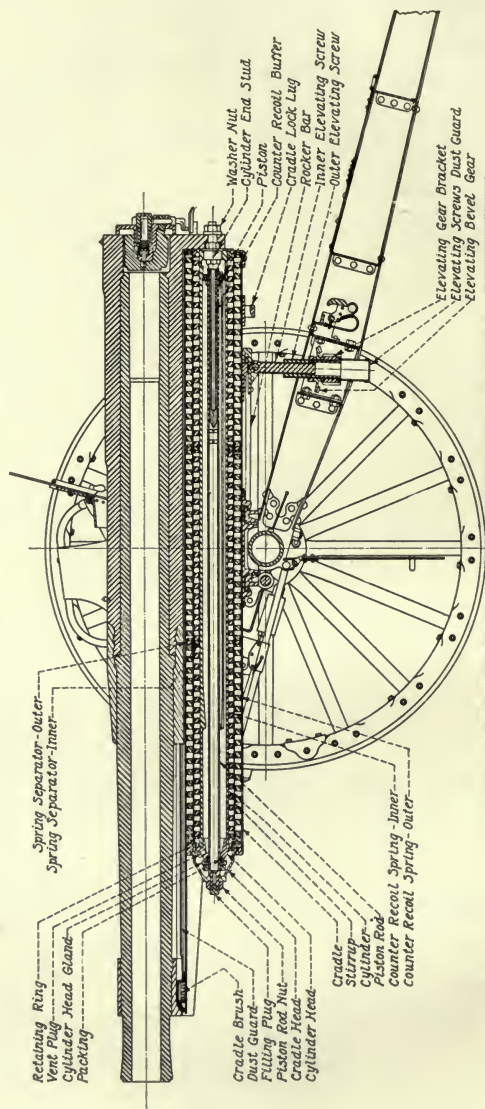
No.	Name of part.	Location.	Property classification.	
			Class.	Section.
	Main shield, consisting of—Continued.			
1	Lower center shield hinge.....	Riveted to main shield.....		
2	Wing-nut studs, front.....	Front of main shield.....		
2	Wing-nut studs, rear.....	Rear of main shield.....		
7	Lower bushing.....	For wing-nut studs.....		
3	Upper bushing.....	do.....		
2	Shield brace bolts with nuts.....	Fastens shield braces to clips.....		
4	Wing nut pin washer.....	On pins.....		
1	Shield brace clip, right.....	Riveted to shield.....		
1	Shield brace clip, left.....	do.....		
4	Lower shield bolts with nuts.....	Fasten main shield to axle brackets.....		
1	Seat shield bolt inside, right, with nut.....	Fasten seat to shield.....		
1	Seat shield bolt inside, left, with nut.....	do.....		
2	Seat shield bolt outside, with nuts.....	do.....		
1	Top shield, consisting of—			
1	Top shield.....	Hinged to main shield.....		
2	Top-shield hinge, upper half.....	Riveted to top shield.....		
2	Top-shield hinge, lower half.....	Riveted to main shield.....		
4	Fastening hinges.....	Riveted to top shield.....		
2	Fastening-hinge pins.....	For fastening hinges.....		
3	Top-shield hinge pin.....	For hinges.....		
2	Top-shield fastening.....	For holding top shield secure.....		
1	Upper center shield hinge.....	Riveted to top shield.....		
1	Range quadrant case bracket, consisting of—			
1	Bracket.....	Bolted on rear face of main shield, right side.....		
1	Left spring support.....	Riveted to bracket.....		
1	Right spring support.....	do.....		
1	Range quadrant case, consisting of—			
1	Lid.....	Swung between springs by box supports in bracket.....		
1	Body.....	do.....		
1	Box support, right.....	Riveted on case.....		
1	Box support, left.....	do.....		
1	Bearing plate, upper right.....	Riveted to right box support.....		
1	Bearing plate, lower right.....	do.....		
1	Packing-block base.....	In bottom of case.....		
2	Case hinges, upper half.....	Riveted on lid.....	IV	3
2	Case hinges, lower half.....	Riveted to back of case.....		
1	Hasp hinge.....	Riveted on case lid.....		
1	Hasp.....	Riveted on case front.....		
1	Wing nut.....	Riveted on case.....		
1	Wing-nut pin and washer.....	do.....		
1	Wing-nut pin reinforce.....	do.....		
1	Chain eye.....	do.....		
1	Padlock chain.....	Attached to chain eye.....		
7	Leather-covered packing blocks.....	Screwed to inside of case.....		
3	Bolts with nuts.....	Secure case to bracket.....		
3	0 375 pipes.....	On bolts.....		
1	Lower reinforce.....	Riveted to bracket.....		
1	Upper reinforce.....	do.....		
2	Box bracket bolts with nuts.....	do.....		
6	Springs, quadrant case.....	Not interchangeable with sight case springs.....		
1	Padlock.....	Fastened to chain.....		
1	Bolt snap.....	do.....		
1	Panoramic sight-case bracket, consisting of—			
1	Bracket, sight case.....	Bolted on rear face of main shield, left side.....		
1	Spring support, right.....	Riveted to bracket.....		
1	Spring support, left.....	do.....		
1	Panoramic sight case, consisting of—			
1	Packing-block base.....	In bottom of case.....		
1	Lid.....	Suspended between springs and bracket.....		
1	Body.....	do.....		
1	Bottom.....	do.....		
2	Box supports.....	Riveted to case.....		
1	Hasp.....	Riveted on case front.....		
1	Hasp hinge.....	Riveted on case lid.....		
2	Case hinges, upper half.....	do.....		
2	Case hinges, lower half.....	Riveted to back of case.....		
1	Filler block.....	In case.....		
1	Lower reinforce.....	Riveted to bracket.....		
1	Upper reinforce.....	do.....		
1	Wing nut.....	Riveted on case.....		



3.8-Inch Gun Carriage, Model of 1904

Plan





*3.8-Inch Gun Carriage Model of 1904.  
Longitudinal Section.*

Scale 0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64 68 inches.



## Nomenclature of parts of carriage (complete)—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
	Panoramic sight case, consisting of—Com.		IV	3
1	Wing-nut pin and washer.....	Riveted on case.....		
1	Wing-nut pin reinforce.....	do.....		
1	Chain eye.....	do.....		
1	Padlock chain.....	Attached to chain eye.....		
5	Leather-covered wood packing blocks.....	Screwed to inside of case.....		
4	Bolts with nuts.....	Secure case to bracket.....		
4	0.375 pipes.....	On bolts.....		
8	Springs, sight-case.....	Not interchangeable with quadrant-case springs.....		
1	Padlock.....	Fastened to chain.....		
1	Bolt snap.....	do.....		
1	Front-sight, consisting of—			
1	Front-sight bracket.....	Rests in socket riveted to cradle.....		
1	Sleeve.....	Threaded to bracket.....		
1	Holder.....	Supports ring with cross wires.....		
1	Rear sight, consisting of—			
1	Rear-sight bracket, with shank socket..	Fastened by two nuts to bracket support riveted to cradle.....		
1	Rear-sight shank.....	Constitutes the rear sight.....		
1	Shank-socket cover.....	Bolted to shank socket.....		
1	Panoramic sight.....	Fitted to rear-sight shank.....		
1	Range quadrant.....			
2	Wheels, 58-inch, complete, consisting of—			
16	Tire bolts, with nuts and washers.....			
16	Dowels.....			
64	Felloe rivets.....			
128	Washers.....			
16	Felloe segments.....			
32	Spokes.....			
2	Tires.....			
2	Hub boxes.....			
2	Hub liners.....	Forced into hub boxes.....		
2	Hub rings.....	Outer flanges of hubs.....		
16	Carriage bolts.....			
16	Carriage-bolt nuts.....			
2	Lock washers.....	Between hub rings and hub caps.....		
2	Hub caps.....	On ends of hubs.....		
2	Oil valves.....	In hub caps.....		
2	Washers.....	For oil valve.....		
2	Springs.....	do.....		
2	Wheel fastenings (in halves).....	At ends of axle.....		
	Consisting of—			
2	Wheel-fastening pin.....			
2	Hasp.....			
2	Hasp staple.....			
2	Twisted coil chain, with ring pin.....			

## DESCRIPTION OF THE CARRIAGE.

[Plates V, VI, and VII.]

The carriage for the 3.8-inch gun is of the type known as the long recoil, in which the gun is permitted a sufficient length of recoil upon the carriage to render the latter stationary under firing stresses.

As this carriage is of the same general design as the 3-inch gun carriage, model of 1902, the description of the carriage and its parts given in the handbook on 3-inch Gun Matériel, Form No. 1659, will be used.

There are differences in design, however, existing between some parts of the two carriages, such as in the traversing mechanism, the rocker, and other smaller parts. These are taken up in their proper order, and the differences may be readily seen by comparison with similar paragraphs in the above-mentioned handbook. Any dimen-

sions given in the description of the 3-inch gun carriage will be disregarded, as the 3.8-inch gun has a larger carriage. Numbers of carriages will also be disregarded.

#### WHEELS.

The wheels are a heavier type of the Archibald pattern, 58 inches in diameter, with 4-inch tires. The hub cap is of forged steel and no hub band or hub-latch plunger is used.

The wheel fastening is of a different design, being made in halves and pinned together by means of a pin and interlocking lugs at one end and a hasp and split pin at the other. The fastening has a square thread, onto which the wheel is screwed. The wheel is locked to the fastening by means of the hasp and staple.

#### TRAIL.

The only difference noted in the trail is that the rear ends of the flasks are not flanged outward at the points at which the float is attached.

#### ELEVATING GEAR.

The functioning of the elevating gears is the same, but differs in construction. In place of the angle the 3.8-inch gun-carriage rocker has two steel bars threaded in the pintle socket at one end and riveted to the traversing clip at the other. The traversing clip serves as a point of attachment for both the traversing and elevating mechanism.

#### TRAVERSING MECHANISM.

The traversing mechanism consists of the traversing worm shaft, mounted in a bearing in the traversing clip. The bearing is inclined  $30^\circ$  to the horizontal and is bushed at either end. Through an aperture provided for the purpose the worm thread on the traversing worm shaft engages with the rack on the traversing plate, which in turn is riveted to the cradle. A pin, inserted in the traversing clip after assembly, serves as a traversing stop. Two small lugs, one at the center and one at the right of the traversing plate, limit the motion of the gun to right or left. The traversing worm shaft extends upward and to the left, terminating in a seat for the traversing handwheel. Turning the handwheel causes the cradle, with the gun, to be traversed, the amount of motion provided being 106 mils, 53 on each side of the axis of the carriage.

#### CRADLE COMPLETE.

The cradles complete are similar in design and operation except as noted. The 3.8-inch gun-carriage cradle has three steel forgings riveted to its under side—the pintle, traversing plate, and cradle-lock lug. The traversing and elevating mechanism are attached at the same point.



## ACTION OF MECHANISM DURING RECOIL.

The firing mechanism is as described in the handbook, Form 1659, for carriages after No. 168.

## AMMUNITION CARRIERS.

There are no ammunition carriers mounted on the 3.8-inch gun carriage, and all references thereto in the handbook, Form 1659, should be disregarded.

## ROAD BRAKE.

The spring cover and spring-cover end mentioned in the handbook, Form 1659, are integral on the 3.8-inch carriage.

There is but one rack riveted to the brake-segment bracket.

## THE SHIELD.

The apron is hinged to the axle-seat brackets and the axle bearings and reaches to within 5.25 inches of the ground. For traveling, it is swung up under the seats and held by two apron latches, which are attached to brackets riveted to the foot-rest supports. The main shield is rigidly attached by bolts to the axle-seat brackets and axle bearings and is braced by two shield braces, reaching from its upper corners to the foot-rest frame. It has two wing nuts for securing the top shield when folded down and has a sighting port and a gun port. The latter is made a minimum port, and the shield is stiffened by a hood riveted to its front face. The upper edge of the top shield is 64 inches from the ground.

## TO FILL THE RECOIL CYLINDER.

In the instructions regarding the filling of recoil cylinders the following important point should be noted in addition to the instructions given in the handbook: *The cylinder should be refilled after any test which requires the retracting of the gun.*

## TO DISMOUNT THE TRAVERSING MECHANISM.

The gun being dismantled, remove the traversing stop pin from the clip and traverse the cradle (muzzle end) to its extreme left position. This will disengage the rack from the worm on the shaft. To remove the worm shaft, first remove the handwheel, next the nut from the upper end of the shaft, and then unscrew the bushing from the traversing clip, which will allow the shaft to be withdrawn. To assemble the traversing mechanism, the above operations are reversed.

## TO REMOVE A WHEEL.

First, remove the hub cap by unscrewing with the spanner furnished, remove the lock washer, undo and throw back the hasp attached to the wheel fastening, and then unscrew the wheel from the wheel fastening, which will allow its being removed.

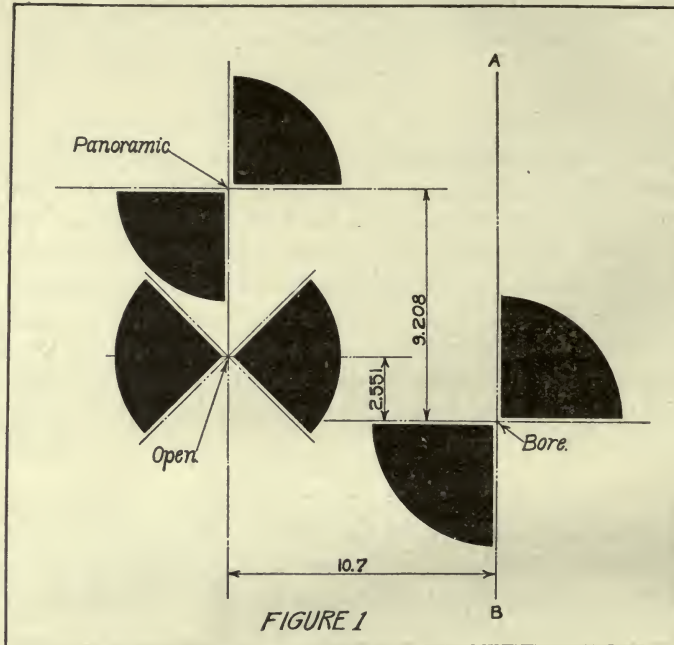
## TO REMOVE A WHEEL FASTENING.

The wheel having been removed as directed above, withdraw the 0.25 split pin; the wheel fastening, being in halves and hinged at the bottom, can then be removed from the axle.

## ADJUSTMENT OF SIGHTS.

## VERIFICATION OF PARALLELISM OF LINES OF SIGHT AND AXIS OF BORE.

Information in handbook 1659 applies to the 3.8-inch gun, with the exception of that shown in figure 1.



THE 3.8-INCH GUN LIMBER, MODEL OF 1904.

[Plate VIII.]

## WEIGHTS, DIMENSIONS, ETC.

Weight, complete, empty.....	pounds..	1, 102
Weight of tools and equipment carried.....	do....	91
Weight of ammunition carried.....	do....	682
Weight, completely equipped and loaded.....	do....	1, 875
Weight of gun, carriage, and limber, completely equipped and with 18 rounds of ammunition.....	pounds..	5, 750
Rounds of ammunition carried in limber chest.....	number..	18
Diameter of wheels.....	inches..	58
Width of track.....	do....	60
Free height under limber (and carriage).....	do....	21
Turning angle with carriage.....	degrees..	76
Turning angle with caisson.....	do....	75

## Nomenclature of parts of limber.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
2	Wheels and wheel fastenings.....	Same as on carriage.....		
1	Axle.....			
1	Middle rail (upper and lower half), consisting of—	Riveted to axle.....		
1	Pole clamp.....	Riveted to middle rail.....		
1	Pole-prop bracket.....	Riveted to pole clamp and middle rail with limber prop in place.		
1	Pole-clamp bolt.....	In pole clamp.....		
1	Pole-clamp bolt nut.....			
1	Pole pin.....	Secures pole in seat.....		
1	Pole-pin reinforce.....	Riveted to lower half of middle rail.....		
1	Pole stop.....	Riveted between upper and lower half of middle rail.		
1	Dowel.....	For middle rail, upper section.....		
1	Doubletree strap.....	Riveted to middle rail.....		
1	Doubletree bolt.....	In bolt clamp and doubletree strap.....		
1	Doubletree-bolt nut.....			
1	Side rail, right, consisting of—	Riveted to axle and middle rail.....		
1	Side-rail connection, right.....	Riveted to side rail and pole clamp.....		
2	Separators.....	For bracing flanges of side rail.....		
4	Rear reinforce plates.....			
1	Step.....	Riveted to side rail.....		
1	Side rail, left, consisting of—	Riveted to axle and middle rail.....		
1	Side-rail connection, left.....	Riveted to side rail and pole clamp.....		
2	Separators.....	For bracing flanges of side rail.....		
4	Rear reinforce plates.....			
1	Step.....	Riveted to side rail.....		
1	Name plate.....	Riveted to middle rail.....		
1	Limber prop, consisting of—	Assembled to middle rail by means of prop eye.		
1	Limber-prop foot.....	Pinned to bottom of prop.....		
1	Limber-prop eye.....	Pinned to top of prop.....		
1	Chain.....	Secured to prop foot.....		
1	Prop tube.....	Hinged to pole by prop eye.....		
1	Prop-chain fastening.....	Riveted to chain.....		
1	Prop bracket.....	Riveted to pole clamp.....		
1	Prop-chain button.....	Riveted to foot rest.....		
1	Prop-chain button rivet.....	For prop-chain button.....		
1	Prop-chain handle.....	On end of prop chain.....		
2	Tie rod, front.....	Brace middle rail from axle.....		
2	Tie rod, rear.....	do.....		
2	Tie-rod clamp, upper.....	On axle arms.....		
2	Tie-rod clamp, lower.....	do.....		
2	Tie-rod pins.....	Fasten front ends of front tie rods.....		
4	Tie-rod clamp bolts.....	Fasten tie rods to clamps.....		
2	Key, for tie-rod clamp.....	Prevent clamps from turning on axle.....		
1	Foot rest, consisting of—			
1	Foot-rest brace, et, right.....	Riveted to ammunition chest.....		
1	Foot-rest bracket, left.....	do.....		
1	Foot rest.....	Riveted to foot-rest brackets.....		
1	Foot-rest support, right.....	Supports right side of foot rest.....		
1	Foot-rest support, left.....	Supports left side of foot rest.....		
2	Foot-rest support pin.....	Pin supports to handrail forward brackets.....		
1	Doubletree-rod guide, right.....	Riveted to foot rest.....		
1	Doubletree-rod guide, left.....	do.....		
1	Pick-handle bracket.....	do.....		
1	Shovel-handle bracket.....	do.....		
1	Pintle with bearing, complete, consisting of—			
1	Pintle.....	Seated in pintle bearing.....		
1	Pintle latch.....	On pintle.....		
1	Pintle-latch pin with split pin.....	Forms pivot of latch.....		
1	Pintle-latch spring.....	On pintle.....		
1	Pintle bearing (in two parts).....	Rear end of middle rail.....		
1	Pintle spring.....	In pintle bearing.....		
1	Pintle-spring pin.....	do.....		
2	Pintle-bearing bolts with nuts.....	Secures bearing to middle rail.....		
1	Doubletree, consisting of—			
1	Doubletree body with reinforce.....			
10	Separators.....			
1	Nipple separator.....	Riveted together.....		
1	Double hook, right.....			
1	Double hook, left.....			
1	Doubletree nipple.....	Renewable.....		
1	Nipple nut.....			
2	Doubletree chain.....	Fastened to doubletree and ends of chest.....		
1	Doubletree-strap fastener.....	Fastened to doubletree strap.....		
1	Reinforce piece.....	Around doubletree body.....		

IV

3



## Nomenclature of parts of limber—Continued.

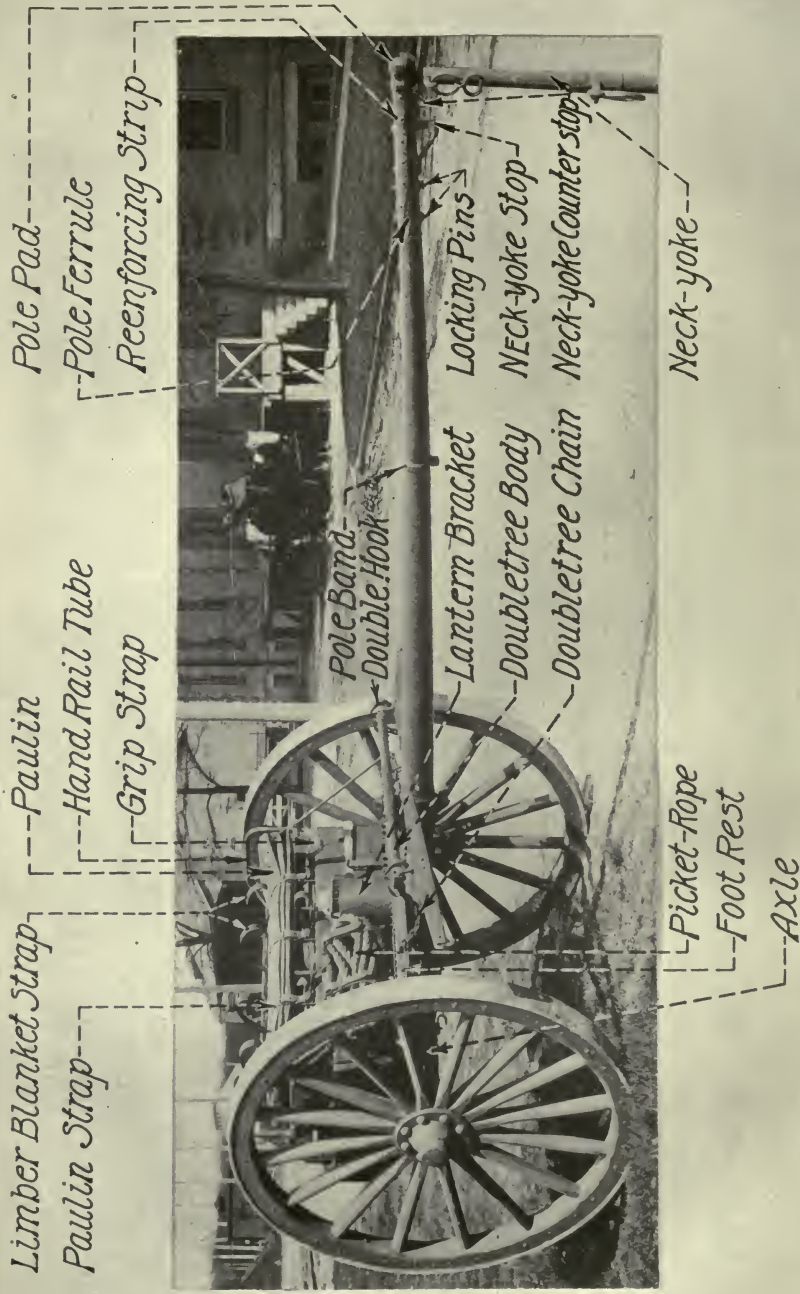
No.	Name of part.	Location.	Property classification.	
			Class.	Section.
1	Pole, complete, consisting of—			
1	Pole body.....	Riveted in body.....		
1	Pole plug.....	Bears on neck-yoke counter stop.....		
1	Neck-yoke counter-stop spring.....	Riveted in body.....		
1	Neck-yoke counter-stop pin.....	Hinges on counter-stop pin.....		
1	Neck-yoke counter stop.....	Riveted to body.....		
1	Neck-yoke stop.....	Riveted to upper side of body.....		
1	Neck-yoke chafing plate.....	Inside of body.....		
1	Neck-yoke stop separator.....	do.....		
1	Neck-yoke stop-rivet separator.....	do.....		
1	Pole-pin bushing.....	Riveted to inside of body.....		
1	Butt reinforce.....			
1	Oil-can holder, complete, consisting of—			
1	Oil-can holder.....	Riveted to right side of chest and brackets.....		
1	Oil-can holder bracket.....	Riveted to right side of chest near top.....		
1	Oil-can holder hasp.....	Fastened to hasp hinge.....		
1	Hasp hinge.....	Riveted to bracket.....		
1	Hasp-hinge pin.....	Pins hasp to hasp hinge.....		
1	Ammunition chest, complete, consisting of—			
1	Chest bottom.....			
1	Chest door.....	Constitute body.....		
1	Chest front.....			
1	Chest top.....			
1	Front diaphragm.....	Riveted to chest body.....		
1	Middle diaphragm.....	do.....		
1	Rear diaphragm.....	do.....		
1	Connecting piece.....	Connect rear and middle diaphragm.....		
1	Chest front reinforce.....	Riveted to chest front.....		
1	Door stiffener.....	Riveted around edge of door.....		
2	Outer bearing plate.....	Riveted to door.....		
2	Small bearing plate.....	do.....		
1	Do.....	do.....		
1	Do.....	do.....		
1	Chest rail, right.....	Riveted to bottom of chest.....		
1	Chest rail, left.....	do.....		
4	Chest rail connection.....	Riveted to chest rails.....		
4	Connection pin.....	Pin-chest rail connections to side rails.....		
4	Door hinge (in two pieces).....	Riveted to door and chest top.....		
4	Door-hinge pin.....	For door hinges.....		
4	Door-hinge reinforce.....	Riveted to chest top with hinges.....		
1	Door handle.....	Riveted to door.....		
2	Door-handle reinforce.....	Riveted to door with handle.....		
1	Bucket holder.....	Riveted to top of chest; forms seat.....		
2	Bucket-holder transom, right.....	Riveted to bucket holder and chest top.....		
2	Bucket-holder transom, left.....	do.....		
4	Corner reinforce.....	Reinforce corners of bucket holder.....		
1	Lock bar, right.....	Supported at ends by hinges.....		
1	Lock bar, left.....	do.....		
2	Lock-bar hinge.....	Riveted to chest bottom.....		
2	Lock-bar hinge reinforce.....	Riveted to chest bottom with hinge.....		
1	Lock-bar outer hinge, right.....	Supports outer end of right lock bar.....		
1	Lock-bar outer hinge, left.....	Supports outer end of left lock bar.....		
1	Lock-bar outer hinge reinforce, right.....	Riveted to chest bottom with outer hinge.....		
1	Lock-bar outer hinge reinforce, left.....	do.....		
2	Handrail.....	Riveted in handrail brackets.....		
4	Handrail foot.....	Riveted to sides of chest.....		
1	Handrail forward bracket, right.....	Riveted to right handrail.....		
1	Handrail forward bracket, left.....	Riveted to left handrail.....		
1	Handrail rear bracket, right.....	Riveted to right handrail.....		
1	Handrail rear bracket, left.....	Riveted to left handrail.....		
14	Reinforce washer.....	8 under handrail-foot rivets; 4 under pick-head bracket rivets; 2 under ax-head bracket rivets.....		
2	Hinge bearing plate.....	Riveted to door with two middle hinges.....		
1	Left pole prop bracket.....	Riveted to top of chest.....		
1	Right pole prop bracket.....	do.....		
1	Ax-handle bracket.....	Riveted to left side of chest.....		
1	Ax-head bracket.....	do.....		
1	Ax-handle guard.....	do.....		
1	Hatchet-blade bracket.....	Riveted to chest front.....		
1	Hatchet-handle fastener.....	do.....		
1	Lantern bracket.....	do.....		
1	Lantern-strap fastener.....	Fastened to lantern bracket.....		
1	Pick-ax chafing plate.....	Riveted to bottom of chest.....		

IV

3







## Nomenclature of parts of limber—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
	Ammunition chest, complete, consisting of—Continued.		IV	2
1	Pick-ax head bracket.....	Riveted to bottom of chest.....		
1	Shovel-blade bracket.....	do.....		
2	Wing-nut pin.....	Riveted to chest door.....		
2	Wing nuts.....	On wing-nut pins.....		
1	Wing-nut pin.....	Riveted to oil-can holder.....		
1	Wing nut.....	On wing-nut pin.....		
3	Grip-strap fasteners.....	Riveted to chest.....		
3	Strap fasteners for paulin strap.....	Riveted to bucket holder.....		
1	Ax-strap fastener.....	Riveted to left side of chest.....		
1	Shovel-strap fastener.....	Riveted to shovel-blade bracket.....		
2	Right pole-prop bracket strap fastener.....	Riveted to right pole prop bracket.....		
8	Limber-blanket strap fastener.....	4 riveted to chest top; 4 to bucket holder.....		
1	Hatchet-strap fastener.....	Riveted to chest front.....		
2	Pick-strap fastener.....	Riveted to pick-ax head bracket.....		
2	Rope-strap fasteners.....	Riveted to chest front.....		

## DESCRIPTION OF THE 3.8-INCH GUN LIMBER, MODEL OF 1904.

The 3.8-inch gun limber is of the same general design as the 3-inch gun limber, Model of 1902, and therefore the description of the latter, given in handbook 1659, will be used for the 3.8-inch gun limber.

The 3.8-inch has a few differences, however, in the chest, the wheels, and location of the tools, which are described below.

The differences in the wheels and the wheel fastenings are the same as described for the gun carriage in this handbook.

The chest door is hinged at the top and swings upward and to the front. The chest front and door have not the corrugations mentioned in handbook 1659, but the door has riveted to its inner face tees, called bearing plates, which not only serve to strengthen the door but are so spaced that their stem falls between the vertical rows of cartridges and their flange rests against the head of the cartridge, securing the latter in position (when the door is closed) and protecting the cartridge percussion cap.

The door is held closed by two lock bars hinged to the bottom of the chest. A hasp and two eccentric lugs are formed upon each of these bars. In locking the door the lugs come into contact with its lower edge pressing it forward, while the hasp engages a wing nut on its rear face. On the left lock bar is riveted a chain, to the end of which is attached a padlock and a bolt snap. The padlock may be slipped through an eye in the wing nut, which will lock the hasp in position.

The capacity of this limber is 18 cartridges. The capacity of the 3-inch gun limber is 39 cartridges.

The differences in the location of the tools are as follows:

The ax is carried in brackets on the left side of the chest.

The pickax is carried in brackets under the chest to the left of the middle rail, the shovel being carried to the right of the rail.

The hatchet is carried in two brackets riveted to the front of the chest, and the pole prop is carried in brackets attached near the rear edge of the top plate.

The oil cans are carried in a holder made of flange steel riveted to the right side of the chest.

No ammunition is carried in limbers used with the gun, since the weight would be too great.

### THE 3.8-INCH GUN CAISSON, MODEL OF 1904.

[Plate IX.]

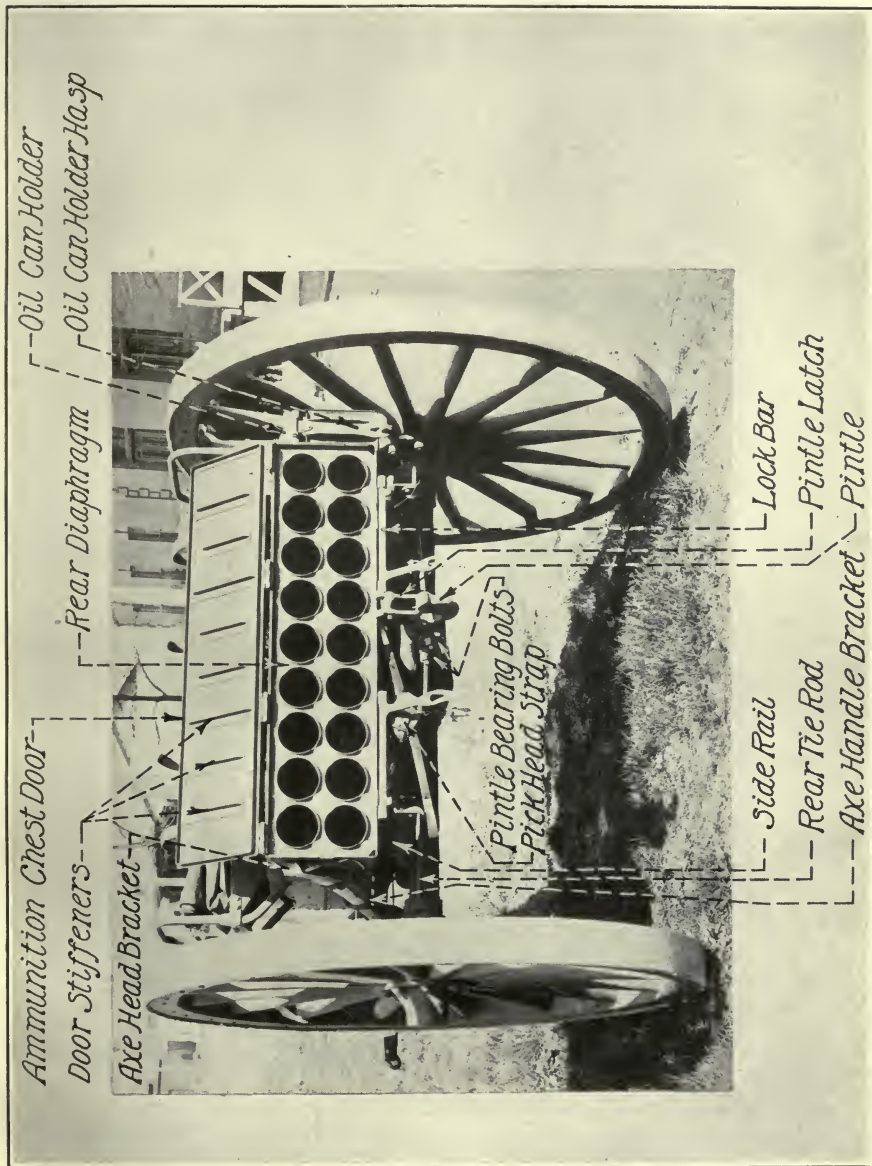
#### WEIGHTS, DIMENSIONS, ETC.

Weight, empty, without implements and ammunition.....	pounds..	1, 426
Weight of tools and equipment carried.....	do....	99
Weight of ammunition carried.....	do....	1, 516
Weight, complete, equipped and loaded.....	do....	3, 041
Weight with limber, completely equipped and with 58 rounds of ammunition, pounds.....		4, 916
Rounds of ammunition carried.....	number..	40
Diameter of wheels.....	inches..	58
Width of track.....	do....	60
Free height under caisson.....	do....	22
Turning angle.....	degrees..	75

#### *Nomenclature of parts of caisson.*

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
2	Wheels and wheel fastenings.....	Same as on carriage.....	IV	2
1	Axle.....			
1	Middle-rail angle, right.....	Riveted to axle and side rail.....		
1	Middle-rail angle, left.....	do.....		
1	Middle-rail plate.....	Riveted to middle rail angles.....		
1	Side rail, right.....	Riveted to axle lugs.....		
1	Side rail, left.....	do.....		
4	Filler plates.....	Riveted to side rail flanges.....		
1	Pintle with bearing, complete, consisting of—			
1	Pintle.....	Seated in pintle bearing.....		
1	Pintle latch.....	On pintle.....		
1	Pintle-latch pin with split pin.....	Forms pivot of latch.....		
1	Pintle-latch spring.....	On pintle.....		
1	Pintle bearing (in 2 parts).....	Rear end of middle rail.....		
1	Pintle spring.....	In pintle bearing.....		
1	Pintle-spring pin.....	do.....		
2	Pintle-bearing bolts with nuts.....	Secures bearing to middle rail.....		
1	Name plate.....	Riveted near rear end of middle rail.....		
1	Brake channel.....	Fastened to side rails.....		
4	Channel supports.....	Fasten channel to side rails.....		
1	Cross brace.....	Riveted to side rails.....		
1	Frame handle, right.....	Front end of side rails.....		
1	Frame handle, left.....	do.....		
1	Frame reinforce plate.....	do.....		
1	Lunette bracket.....	do.....		
1	Lunette bracket filler plate.....	Under lunette bracket.....		
1	Lunette with nut.....	Secured in lunette bracket.....		





3.8-INCH GUN LIMBER, MODEL OF 1904. REAR VIEW.



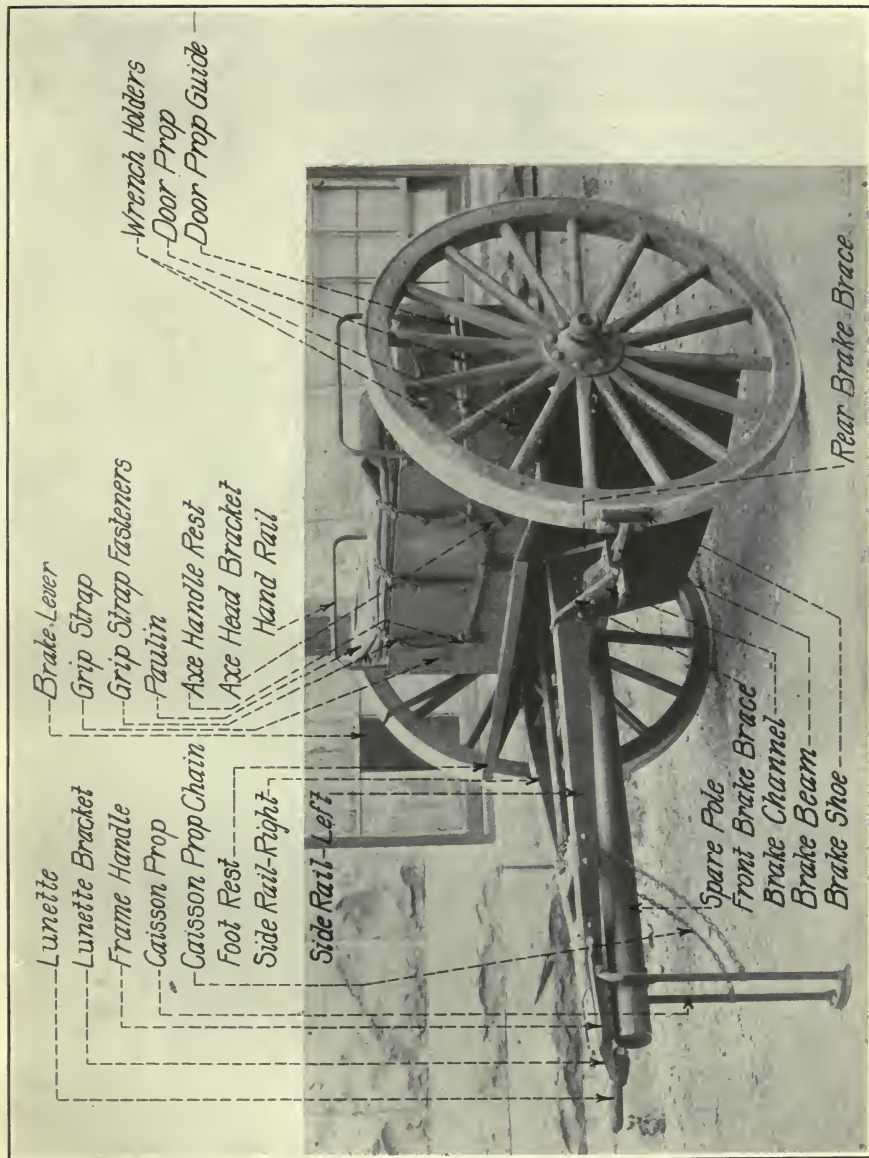
## Nomenclature of parts of caisson—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
1	Caisson prop, complete, consisting of—			
1	Prop eye, right.....	Riveted to right tube.....		
1	Prop eye, left.....	Riveted to left tube.....		
2	Prop tubes.....	Support pole.....		
1	Prop foot.....	Riveted to lower ends of tubes.....		
1	Fastening pin.....	Through prop eyes.....		
1	Fastening-pin washer nut.....	On fastening pin.....		
1	Fastening nut.....	Secures prop to vehicle.....		
2	Prop-chain clamps.....	On prop tubes.....		
2	Prop chain.....	Secured to prop.....		
1	Prop hook.....	On chain.....		
1	Prop-chain button.....	Riveted into lunette bracket.....		
2	Prop-chain guides.....	Riveted to cross brace.....		
1	Box bottom, right.....	Riveted to ends of brake channel.....		
1	Box bottom, left.....	do.....		
2	Brake-box fillers.....	do.....		
1	Brake-beam guide, right.....	Riveted to brake channel.....		
1	Brake-beam guide, left.....	do.....		
1	Front brake brace, right.....	Brake channel to side rails.....		
1	Front brake brace, left.....	do.....		
1	Rear brake brace, right.....	do.....		
1	Rear brake brace, left.....	do.....		
2	Brake beams.....	Seated in brake boxes.....		
2	Brake shoes.....	On end of brake beams.....		
4	Brake-shoe tap bolts.....	Secure shoes to beams.....		
2	Brake-beam pins.....	Form pivots.....		
2	Brake-rod ends.....	Connect rods to brake beams.....		
2	Brake rods.....	Connect beams to cranks.....		
	Including—			
2	Brake-rod springs.....	On brake rods.....		
2	Brake-spring covers.....	do.....		
2	Brake-spring cover heads.....	do.....		
2	Brake-spring cover ends.....	do.....		
4	Brake-rod pins.....	Secure rods to beams and cranks.....		
2	Brake cranks.....	On brake shaft.....		
2	Brake-crank bolts with nuts.....	Clamp cranks on shaft.....		
1	Brake shaft with two keys.....	In shaft bearings on axle.....		
3	Brake-shaft bearings.....	Riveted to axle lugs.....	IV	3
3	Brake-shaft bushings.....			
1	Brake-segment bracket.....	Clamped on right end of axle.....		
1	Brake-segment bushing.....	On brake-segment bracket.....		
1	Brake-segment bracket bolt and nut.....	Clamps bracket to axle.....		
1	Brake segment.....	Riveted to bracket.....		
1	Brake-segment brace.....	Riveted to brake segment.....		
1	Brake-segment guard.....	Riveted to segment.....		
1	Segment rack.....	do.....		
1	Front separator.....	Between segment and guard.....		
1	Rear separator.....	do.....		
1	Rear-separator bolt.....	Through rear separator.....		
1	Brake lever.....	On end of shaft.....		
1	Brake-lever catch.....	Riveted on brake lever.....		
1	Spare-pole fastening.....	On caisson-prop pin.....		
1	Fastening nut.....	On spare-pole fastening.....		
2	Fastening washers.....	On spare pole.....		
1	Spare-pole bracket.....	Riveted to middle rail.....		
1	Spare-pole rest.....	Riveted to brake channel.....		
1	Pick-mattock bracket.....	do.....		
1	Shovel-handle support.....	Riveted to cross brace.....		
2	Strap fasteners for pick mattock.....	Riveted to pick-mattock bracket and brake channel.....		
1	Ammunition chest, complete, consisting of—			
1	Chest top plate.....	Constitute chest body.....		
1	Chest bottom plate.....			
1	Chest front plate.....			
1	Chest door.....			
1	Rear diaphragm.....	Riveted to chest.....		
1	Middle diaphragm.....	do.....		
1	Front diaphragm.....	do.....		
1	Diaphragm brace, right.....	Between front and middle diaphragms.....		
1	Diaphragm brace, left.....	do.....		
10	Diaphragm tees.....	4 for rear diaphragm; 3 for middle, and 3 for front diaphragms.....		
40	Connecting pieces.....	Connect rear and middle diaphragms.....		
1	Chest reinforce.....	Riveted to bottom of chest.....		
1	Chest-front angle.....	Riveted around edges of chest front.....		

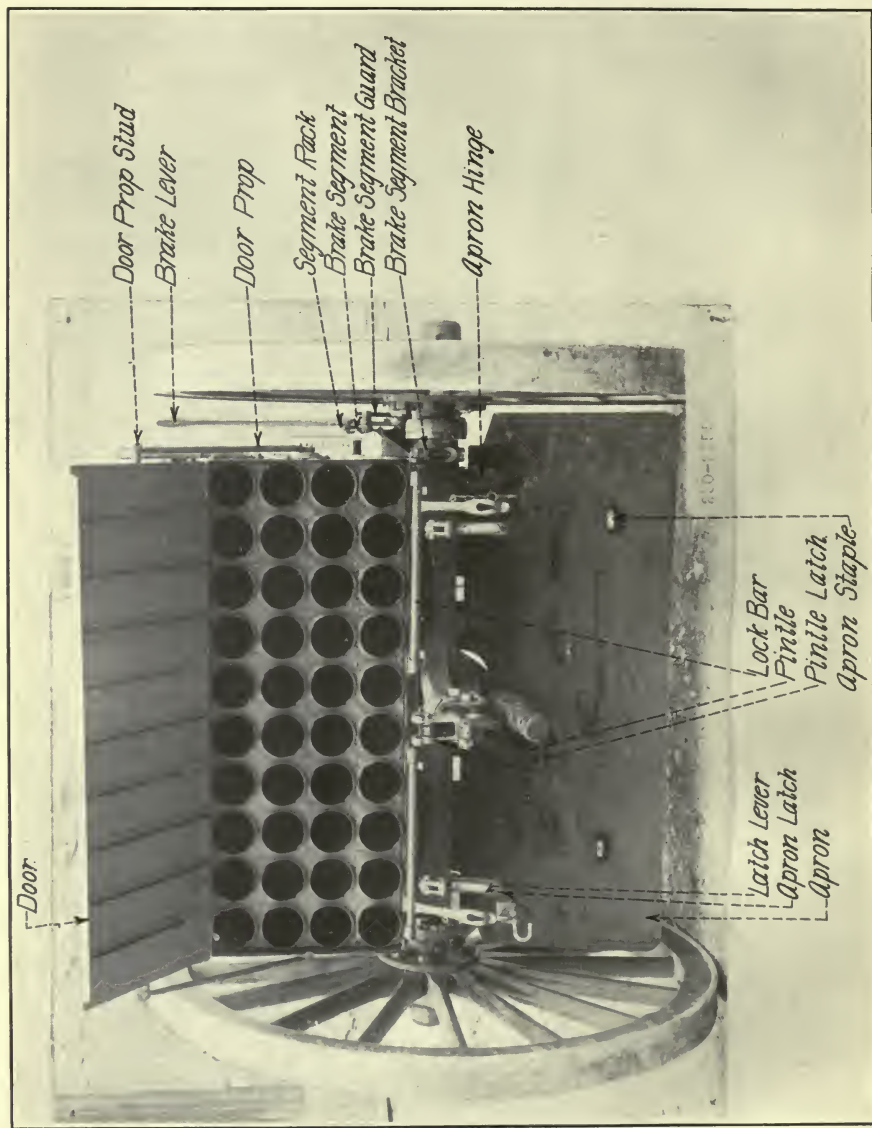
## Nomenclature of parts of caisson—Continued.

No.	Name of part.	Location.	Property classification.	
			Class.	Section.
1	Ammunition chest, complete, consisting of—Continued.		IV	3
3	Chest-front brace.....	Stiffens chest front.....		
1	Ax-head bracket.....	Riveted to front plate.....		
1	Ax-handle support.....	do.....		
1	Ax-strap fastener.....	do.....		
3	Grip-strap fasteners.....	Riveted to chest.....		
3	Paulin-strap fasteners.....	do.....		
1	Shovel support.....	Riveted to bottom of chest.....		
4	Reinforce washers.....	Under rivet heads for pick-mattock handle support and shovel support.....		
1	Pick-mattock handle support.....			
1	Wrench holder for spanner wrench.....	Riveted to left side of chest.....		
1	Do.....	do.....		
1	Wrench holder for nut wrench.....	do.....		
1	Do.....	do.....		
2	Strap fasteners for wrenches.....	Riveted to chest.....		
1	Chest rail, right.....	Riveted to bottom plate.....		
1	Chest rail, left.....	do.....		
2	Filler pieces.....	Riveted to chest bottom and chest rails.....		
1	Apron-latch hinge, right.....	Riveted to chest rails.....		
1	Apron-latch hinge, left.....	do.....		
1	Foot rest.....	do.....		
4	Handrail shanks.....	Riveted to sides of chest.....		
2	Handrails.....	Riveted to handrail shanks.....		
1	Door-prop guide, right.....	Riveted to sides of chest.....		
1	Door-prop guide, left.....	do.....		
4	Door tees.....	Riveted to inside of door.....		
5	Do.....	do.....		
1	Door angle.....	Riveted to door.....		
1	Lock bar, right.....	Lock bar hinges.....		
1	Lock bar, left.....	do.....		
2	Lock-bar hinges.....	Riveted to bottom plate.....		
2	Padlock-chain rivets.....	On lock bars.....		
2	Wing-nut pins.....	Riveted to door.....		
2	Wing nuts.....	On wing-nut pins.....		
2	Wing-nut pin washers.....	On pins.....		
1	Padlock with chain and bolt snap.....	On lock bar.....		
1	Chain with two chain rings and bolt snap.....	Attached to lock bar.....		
1	Padlock-chain staple.....	Riveted to bottom plate.....		
2	Door-prop studs.....	Riveted to door.....		
2	Nuts.....	For studs.....		
2	Door props.....	Pivoted on studs.....		
2	Door-prop rivets.....			
4	Door-hinge pins.....	For hinges.....		
4	Door hinges, male.....	Riveted to door.....		
4	Door hinges, female.....	Riveted to top plate.....		
1	Door handle.....	Riveted to door.....		
1	Fuze setter latch hinge.....	do.....		
1	Apron, complete, consisting of—			
1	Apron.....	Hinged under axle.....		
2	End hinge filler pieces.....	Riveted to apron.....		
1	Center hinge, right.....	do.....		
1	Center hinge, left.....	do.....		
1	End hinge, right.....	do.....		
1	End hinge, left.....	do.....		
1	Apron staple, right.....	do.....		
1	Apron staple, left.....	do.....		
4	Hinge pins.....	Secure apron to axle.....		
2	Apron latches, complete, consisting of—	Pivoted on hinges on chest rails.....		
2	Hinge pins.....	Attach latch body to hinge.....		
2	Latch bodies.....	Pivoted to latch hinges.....		
2	Latch levers.....	Pivoted on bodies.....		
2	Lever pins.....	Form pivots for levers.....		
2	Latch plungers.....	Seated in body.....		
2	Latch clevises.....	Screwed on end of plunger.....		
2	Latch-clevis pins.....	Attach clevis to lever.....		
2	Latch springs.....	In body around plunger.....		
2	Latch bushings.....	Screwed into body.....		
2	Latch hinges.....	Riveted to chest rails.....		





3.8-INCH GUN CAISSON, MODEL OF 1904. SIDE VIEW.



3.8-INCH GUN CAISSON, MODEL OF 1904. REAR VIEW.

## DESCRIPTION OF THE 3.8-INCH GUN CAISSON, MODEL OF 1904.

The first three paragraphs in the description of the 3.8-inch gun limber will also apply to the caisson, the description of the 3-inch gun caisson, Model of 1902, in handbook 1659 being used.

The following paragraphs in regard to the ammunition chest will take the place of the corresponding ones in handbook 1659:

The caisson ammunition chest is rectangular, and is built up of flange steel formed to shape and riveted together in a similar manner to that of the limber, but is larger, having provision for 40 rounds of ammunition arranged in 4 horizontal rows of 10 rounds each. The front of the chest is made of armor plate 0.15 inch thick. A steel angle is riveted to the armor plate all around its edge and the projecting leg of the angle, riveted to the body of the chest. Three steel tees placed vertically and riveted to the inside of the front plate give stiffness to the latter.

Inside of the chest the cartridges are supported by three vertical diaphragms flanged all around and riveted to the body of the chest. Each diaphragm is perforated with 40 flanged cartridge holes. Corresponding holes in the middle and rear diaphragms are connected by conical brass connecting pieces which are similar to those used in the limber chest. The front and middle diaphragms are rigidly braced to each other by two flanged steel braces riveted between the two.

To the front and middle diaphragms are riveted vertically three steel tees and to the rear diaphragm four steel tees.

Nine instead of seven steel tees are riveted to the inner face of the door.

The description of the bracket fuze setter and attachments in handbook 1659 will be disregarded, as there is no bracket fuze setter on this caisson.

## OTHER 3.8-INCH GUN MATÉRIEL.

The following vehicles are also used in the 3.8-inch batteries:

The 3.8-inch gun forge limber, Model of 1902,

The 3.8-inch gun battery wagon, Model of 1902,

The 3.8-inch gun store limber, Model of 1902, and

The store wagon, Model of 1902.

The descriptions of these vehicles will be found in handbook 1659 under the following names:

The 3.8-inch gun forge limber, Model of 1902, under the head of 3-inch gun and 3.8-inch howitzer, forge limber, Model of 1902.

The 3.8-inch gun battery wagon, Model of 1902, under the head of 3-inch gun battery wagon, Model of 1902.



The 3.8-inch gun store limber, model of 1902, under the head of 3-inch gun and 3.8-inch howitzer store limber, model of 1902.

The store wagon, model of 1902, will be found under the same heading in the handbook.

On all four vehicles, however, the wheels are 58 inches in diameter instead of 56 inches, as given for the 3-inch gun matériel. As the hubs and wheel fastenings on the 58-inch wheels are of another type, the axles are necessarily different. In all other respects these vehicles conform to the descriptions mentioned above.

#### REPAIRS FOR FIELD ARTILLERY MATÉRIEL ISSUED TO THE UNITED STATES ARMY AND THE NATIONAL GUARD.

The following is an addition to the instructions found in Form No. 1659:

A small amount of oil should be put in each wheel before using, as this is the only way to insure that the wheels are properly lubricated unless they are removed.

After any test that requires retracting the gun, the recoil cylinder should be refilled, since in this position the three holes in the piston rod which permit oil to flow from the interior to the rod into the cylinder when filling are in front of the piston-rod gland, thus permitting some oil to escape.

#### METHOD OF LOADING ONE 3.8-INCH GUN BATTERY ON WAR FOOTING FOR TRANSPORTATION BY RAIL.

The flat cars usually obtained from railroad companies vary in length from 34 to 44 feet. Cars longer than 42 feet are unusual. It is desirable that cars 40 feet in length be obtained if possible.

In loading a battery on cars during service operations gun sections should be kept together when possible. Pursuing this idea, a 3.8-inch gun battery may be loaded as follows when cars at least 34 feet in length are obtained:

	Gun and carriage.	Gun limber.	Gun caisson.	Forge limber.	Battery wagon.	Store limber.	Store wagon.
First flat car.....	1	3	2	.....	.....	.....	.....
Second flat car.....	1	3	2	.....	.....	.....	.....
Third flat car.....	1	3	2	.....	.....	.....	.....
Fourth flat car.....	1	3	2	.....	.....	.....	.....
Fifth flat car.....	.....	2	2	1	1	.....	.....
Sixth flat car.....	.....	2	2	.....	.....	1	1
Total.....	4	16	12	1	1	1	1

One box car is to carry harness and all accessories of the vehicles which are not carried in the compartments of these vehicles or rigidly attached to them.



The fifth and sixth cars will be only about three-fourths filled if 34-foot cars are procured. The additional space may be utilized as the battery commander sees fit.

If cars less than 34 feet long are obtained one limber and one caisson will have to be omitted. If cars 44 feet long are obtained one additional limber or caisson can be loaded on each.

In loading the cars, if there are permanent loading platforms along the railroad tracks in the vicinity, the vehicles should be run onto these platforms and loaded from them. If there is no permanent platform in the vicinity it will be necessary to build a temporary ramp. This should be built at the side of the track and the vehicles run on near one end of the car. When loading short cars it may be necessary to remove the pole of the limber last loaded in order to get the limber onto the car. The pole should be replaced in its socket, however, as soon as the vehicle is placed in position.

When loading the cars care must be taken to so load them that there can be no movement of the vehicles on the cars longitudinally, transversely, or vertically. All vehicles, trails of carriages, poles of limbers, and lunettes of caissons and wagons must be secured to the floor of the car. The vehicles are secured as follows:

Two by four inch timbers nailed to the floor of the car on both sides of all wheels hold the wheels securely against transverse motion.

Two by four inch chocks, nailed to the 2 by 4 inch pieces which lie along the sides of the wheels, hold the wheels against longitudinal motion. For the end vehicles of each section of three vehicles four 4 by 4 inch chocks should be used.

A 2 by 4 inch crosspiece placed on the felloes between the two lowest spokes of both wheels of each vehicle and bolted to the floor of the car with two one-half-inch bolts holds the wheels against vertical motion. These bolts should, if possible, be bolted through the crosspieces on the outside of the wheels. If bolts for holding these crosspieces can not be obtained they should be securely nailed down with 7 or 8 inch spikes. Each pole and lunette should be secured to the floor by nailing two 2 by 4 inch blocks to the floor, one on each side, and one 2 by 4 inch piece across the top, near the end of each pole and lunette.

The trails should be secured to the floor by using four 2 by 4 inch blocks, nailing one close up in the rear, one longitudinally along each side, and one across their top in the rear of the trail. Four 2 by 6 inch timbers brace the wheel hubs of the two end vehicles on each car. The hub ends should be hollowed out, the lower ends being spread well apart, forming lateral as well as longitudinal braces and nailed to the floor of the car and to four cleats which are nailed to the floor of the car.

For carrying all harness and all accessories of the vehicles which are not carried in compartments of these vehicles or rigidly attached

to them one box car should be obtained. The matériel in this box car should be packed in boxes if on hand. In case no box car can be obtained all of the harness, etc., should be packed in boxes and placed on the flat cars near the vehicles. These boxes must be securely fastened to the floor of the car to prevent them from sliding off the car or from striking and injuring the vehicles.

To load a 3.8-inch gun battery on war footing will require 1,150 linear feet of 2 by 4 inch lumber, 200 linear feet of 2 by 6 inch lumber, and 50 linear feet of 4 by 4 inch lumber.

### EQUIPMENT.

The following table shows the total equipment of one 3.8-inch gun battery on war footing. A place is designated for most of the articles, but the battery commander may use his discretion as to the disposition of many articles for which no particular fitting or receptacle is provided.

*Statement of total equipment of one 3.8-inch gun battery.*

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
4	Guns and gun carriages.....		IV	3
12	Caissons.....			
16	Limbers.....			
1	Battery wagon.....		IV	9
1	Forge limber.....			
1	Store wagon.....			
1	Store limber.....			
1	Reel, 2-horse.....			
	<i>Tools and accessories for guns and carriages.</i>			
8	Axle seat cushions.....	On axle seat.....	IV	3
4	Breech covers.....	On gun.....		
4	Front-sight covers.....	On front sight.....		
8	Hand-fuze setters.....	In cases.....		
8	Hand-fuze setter cases.....	In trail box.....		
8	Lanyards.....	do.....		
4	Leather pouches for spare parts.....	do.....		
4	Muzzle covers.....	On gun.....		
4	Oil-can boxes, horizontal oilers.....	In trail box.....		
4	Oilers, horizontal.....	In oil can boxes.....		
4	Rear-sight bracket covers.....	On bracket on cradle.....		
4	Rear-sight shank covers.....	On sight in trail sight box.....		
4	Spanner and wrench.....	In trail box.....		
4	Sponge covers.....	On sponge.....		
4	Sponges and rammers.....	In fastenings on trail.....		
4	Spools copper wire No. 20 (3 pounds each)	In trail box.....		
4	Tool kits, canvas, each containing—			
	1 cold chisel $\frac{3}{4}$ by 8 inches.....	do.....		
	1 drift, bronze, large.....			
	1 drift, bronze, small.....			
	1 file, dead smooth, 6 inches, 3 inches square.....			
	1 file, hand, smooth, 8 inches, flat.....			
	1 hammer, hand, cross-peen.....			
	1 pliers, wire cutting, 8-inch.....			
	1 punch, small.....			
	1 screw driver, 10 inches.....			
	1 screw-slot wrench.....			
	1 wrench, filling and drain plugs.....			
	1 wrench, range quadrant.....			
4	Wrenches, $\frac{3}{4}$ and 1 inch.....	do.....		
4	Wrenches for assembling recoil springs and grindstone.....	do.....		

## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Spare parts for guns and gun carriages.</i>			
	For gun:			
1	Breech mechanism.....	In top rear compartment of battery wagon.....	IV	3
4	Block latch.....	In leather pouch for spare parts.....		
4	Block latch spring.....	do.....		
4	Firing pin.....	do.....		
4	Firing-pin spring.....	do.....		
4	Firing-pin sleeve.....	do.....		
8	Handy oilers.....	do.....		
4	Hinge-pin catch.....	do.....		
4	Lever-latch spring.....	do.....		
4	Locking bolt, nut, and pin.....	do.....		
4	Locking-bolt spring.....	do.....		
4	Sear.....	do.....		
8	Trigger-shaft detent.....	do.....		
	For hand-fuze setter, Model of 1905M:			
4	Range-ring screw.....	In leather pouches for spare parts.....	IV	3
6	Handle screw.....	do.....		
3	Stop pins.....	do.....		
4	Corrector-scale screw.....	do.....		
2	Clamping shoe.....	do.....		
2	Wing nut.....	do.....		
2	0.063 by 0.47 steel pin.....	do.....		
4	Stop screw.....	do.....		
2	Index.....	do.....		
4	Plunger.....	do.....		
4	Plunger spring.....	do.....		
	For hand fuze setter, Model of 1913:			
16	Range-ring screw.....	do.....	IV	3
6	Corrector-scale screw.....	do.....		
4	Range index.....	do.....		
4	Index plunger.....	do.....		
4	Index spring.....	do.....		
4	Oil-hole screw.....	do.....		
8	Index-bar screw.....	do.....		
12	Guide-plate screw.....	do.....		
3	Stop-pin screw.....	do.....		
	For carriage:			
1	Apron-latch body.....	In chest for miscellaneous spare parts..	IV	3
1	Apron-latch bushing.....			
1	Apron-latch lever.....			
1	Apron-latch lever pin.....			
1	Apron-latch plunger.....			
1	Apron-latch plunger eye.....			
1	Apron-latch plunger eye pin.....			
2	Apron-latch spring.....			
4	Apron-latch split pins.....			
1	Apron-latch (body) pin with split pin if required.....			
1	Brake lever with catch (or pawl).....	Carried loose.....		
4	Brake shoe.....	Carried in store wagon.....		
8	Brake-shoe tap bolt.....			
1	Segment rack with rivets.....	In chest for miscellaneous spare parts..		
1	Brake-rod spring.....			
1	Cylinder-end stud nut.....	In store wagon.....		
3	Counter recoil spring, inner.....			
3	Counter recoil spring, outer.....	do.....		
1	Elevating pin.....	In chest for miscellaneous spare parts..		
4	Elevating bevel pinion taper pins.....	do.....		
1	Firing-mechanism adjusting screw.....	In chest for miscellaneous spare parts..		
2	Firing-mechanism bracket studs.....			
3	Firing-mechanism bracket-stud nuts.....			
1	Firing-mechanism adjusting-screw check nut.....			
1	Firing handle.....			
1	Firing-handle hub.....			
1	Firing-handle pin.....			
1	Firing-handle plug.....		do.....	
1	Firing-handle plunger.....			
4	Firing-handle spring.....			
1	Firing shaft.....			
2	Firing-handle return spring.....			
2	Shaft return spring.....			
1	Firing-shaft trip collar.....			
1	Firing-shaft trip latch.....			



## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Spare parts for guns and gun carriages—Continued.</i>			
	For carriage—Continued.			
1	Firing-shaft trip-latch pin.....	In chest for miscellaneous spare parts.	IV	3
1	Firing-shaft trip-latch plunger.....			
2	Firing-shaft trip-latch spring.....			
1	Firing-shaft trip-collar pin.....	In leather pouch for spare parts.....		
4	Filling and drain plug (cylinder).....			
4	Filling plug (piston rod).....			
1	Front sight, complete, with bracket.....	In trail sight box.....		
20	Garlock's waterproof packing, $\frac{1}{4}$ rings.....	In leather pouch for spare parts.....		
2	Lunette with nut.....	In store wagon.....		
1	Panoramic sight.....	In box on shield.....		
2	Handspike web.....			
4	Handspike body with rivets and steel washers.....			
2	Handspike lower bands with rivets.....	In store wagon.....		
2	Handspike middle bands with rivets.....			
2	Handspike tips with rivets.....			
6	Handspike bolts with nuts.....			
2	Handspike rivets.....			
4	Spade edge.....			
1	Sponge cover.....			
24	Spade-edge rivets.....			
12	Spring cover No. 1 with screw and washer.....			
1	Carpet with lacing where required.....			
1	Rammer with rivets where required.....			
1	Staff coupling, male.....			
1	Staff coupling, female.....			
1	Staff, end.....			
1	Staff, head.....			
2	Tube collars.....			
1	Sponge tube.....			
1	Sponge retaining ring with taper pin.....			
2	Hub liner.....			
4	Lock washer.....	In box on shield.....		
2	Wheel fastenings, complete.....			
4	Wheel-fastening hasps.....			
1	Hub cap.....			
1	Oil valve, complete, consisting of valve, spring, washer, and split pin.....			
1	Range quadrant.....	In box on shield.....		
1	Rear-sight bracket.....			
1	Rear sight shank.....	On cradle.....		
2	Recoil indicators.....	In trail sight box.....		
240	Split pins, assorted.....			
	Nuts, crown, special, set, consisting of—	Carried equally in leather pouches for spare parts.		
2	0.875 by 20 threads.....			
2	1.25 by 7 threads.....			
2	1.187 ( $1\frac{1}{8}$ ) by 16 threads.....			
	Nuts, crown, standard, set, consisting of—			
14	0.375 by 16 threads.....			
	Nuts, hexagon, special, set, consisting of—			
4	0.5 by 13 threads.....			
40	0.625 by 11 threads.....			
4	0.75 by 10 threads.....			
2	1.375 by 10 threads.....			
	Nuts, hexagon, standard, set, consisting of—			
4	0.5 by 13 threads.....			
16	0.625 by 11 threads.....			
	<i>Tools and accessories for limbers.</i>			
16	Axes.....	On limber, under chest.....	IV	9
48	Buckets, water, canvas.....	On limber.....		
32	Dust guards, leather.....	On wheels.....		
16	Hatchets.....	On limber, in bracket, on left of chest.....		
16	Lanterns.....	On limber, in holder, front of chest.....		
16	Lantern bracket pads.....	In brackets.....		
16	Neck yokes.....	On pole.....		
48	Oil cans, tubular.....	On limber, in ammunition chest.....		
16	Paulins, 12 by 12 feet.....	On limber, on seat as cushion.....		
16	Pickaxes.....	On limber, on foot rest.....		
16	Picket ropes.....	On limber, on front of chest.....		



## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Tools and accessories for limbers—Contd.</i>			
16	Pole props.....	On limber, in fastenings under frame.....	IV	3
16	Shovels, short handled.....	On limber, under chest.....		
32	Singletrees.....	On doubletree.....		
	Straps:			
16	Ax.....	In fasteners.....		
48	Grip.....			
16	Hatchet.....			
64	Limber blanket, front.....			
64	Limber blanket, rear.....			
48	Paulin.....			
16	Pick handle.....			
16	Pick head.....			
64	Picket rope, upper.....			
64	Picket rope, lower.....			
16	Pole prop.....			
16	Shovel handle.....			
	<i>Spare parts for limbers.</i>			
16	Ammunition chest connection pins.....	In chest for miscellaneous spare parts.....	IV	3
8	Ammunition chest door lock bars, complete.			
4	Bolt snaps.....			
4	Doubletrees.....			
4	Doubletree bolts.....			
8	Doubletree bolt nuts.....			
4	Hub caps, complete.....			
8	Hub liners.....			
4	Lantern bracket pads.....			
8	Lock washers.....			
2	Neck yokes.....	In store wagon.....	IV	3
4	Neck-yoke pads.....	do.....		
4	Padlocks, chains, clevises, and bolt snaps.	In chest for miscellaneous spare parts.....		
4	Pintles, complete with bearings and bearing bolts.	Carried loose.....		
4	Pintle latch.....	do.....		
8	Pintle latch spring.....	Carried in chest for miscellaneous spare parts.....		
8	Pintle spring.....	On caisson.....		
2	Poles, complete.....	In store wagon.....		
4	Pole prop.....	do.....		
8	Singletree.....	do.....		
8	Wheel fastening, complete.....	do.....		
16	Fastening hasps.....	do.....		
	<i>Tools and accessories for caisson.</i>			
12	Axes.....	On caisson, front of chest.....	IV	9
12	Paulins.....	On caisson, on seat as cushion.....		
12	Pick mattocks.....	On caisson, under chest.....		
12	Shovels, long handled.....	do.....		
12	Spanners, caisson.....	On caisson, on left of chest.....		
	Straps:			
12	Ax.....	In fasteners.....		
36	Grip.....			
36	Paulin.....			
12	Pick mattock.....			
12	Shovel handle.....			
12	Spanner.....			
12	Wrench.....	On caisson, on left of chest.....		
12	Wrenches, 0.625 and 0.75 inch.....			
	<i>Spare parts for caissons.</i>			
6	Ammunition chest door lock bars, complete.	In chest for miscellaneous spare parts.....	IV	3
6	Apron latches, complete.....			
6	Apron latch springs.....			
3	Bolt snaps.....			
3	Brake levers with catches.....			
12	Brake shoes.....			
24	Brake shoe tap bolts.....			
3	Caisson props with chains and hooks.....			
6	Caisson prop chains and hooks.....			
3	Brake rod springs.....			
3	Hub caps, complete.....	In chest for miscellaneous spare parts.....		
6	Hub liners.....			
6	Lock washers.....			

## Statement of total equipment of one 3.3-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Spare parts for caissons—Continued.</i>			
3	Lunettes.....	In store wagon.....	IV	3
6	Lunette nuts.....			
3	Padlocks, chains, clevises, and bolt snaps.....			
3	Pintles, complete, with bearings and bearing bolts.....			
3	Pintle latches.....			
6	Pintle-latch springs.....			
6	Pintle springs.....			
300	Split pins.....			
6	Wheels, complete.....			
12	Wheel fastenings, complete.....			
12	Fastening hasps.....	do.....		
	<i>Tools and accessories for battery wagon.</i>			
1	Carpenter's chest, with tools, set.....	In battery wagon.....	IV	9
1	Chest for cleaning material and small stores.....	do.....		
1	Chest for spare breech mechanism.....	do.....		
1	Chest for spare sights, containing— 1 bore sight, breech..... 1 bore sight, muzzle.....	do.....		
1	Double tackle block.....	do.....	IV	3
1	Forge coal bag.....	On battery wagon.....	IV	9
1	Filling funnel, cylinder.....	In battery wagon.....	IV	3
1	Grindstone, with frame, complete.....	do.....	IV	9
1	Jackscrow.....	do.....		
1	Marking outfit for stamping leather.....	In cleaning material and small stores	X	5
1	Marking outfit for stamping metal.....	chest.....		
3	Oil cans, 5-gallon.....	In oil-can supports.....	IV	9
1	Ordnance Department insignia stencil.....	In cleaning-material chest.....	X	5
1	Packing chest for supplies.....	In battery wagon.....	IV	3
1	Packing chest for spare parts.....	do.....	IV	9
1	Paulin, 12 by 12 feet.....	On battery wagon.....	IV	3
1	Rope for block and tackle.....	In battery wagon.....		
1	Saddler's chest, with tools, set.....	do.....	X	9
1	Seal stamp.....	In cleaning-material chest.....	X	5
1	Triple tackle block.....	In battery wagon.....	IV	9
2	Spare wheel hub covers.....	On spare wheels.....	IV	3
2	Spring compressors, No. 3.....	In battery wagon.....	X	9
1	Stencil outfit.....	In cleaning-material chest.....	X	5
	<i>Straps:</i>			
2	Grip.....	In strap fasteners.....	IV	3
2	Jackscrow.....			
2	Paulin.....			
1	Testing level and chest.....	In battery wagon.....	IV	9
1	Vise.....	Attached to lunette frame.....	X	9
2	Water buckets, galvanized steel.....	In battery wagon.....	IV	9
1	Wrench, grindstone and recoil-spring assembling.....	do.....	IV	3
	<i>Tools and accessories for store wagon.</i>			
20	Bolos.....	In store wagon.....	VII	5
20	Bolo scabbards.....	do.....		
1	Chest for miscellaneous spare parts.....	do.....	IV	3
1	Crowbar.....	On store wagon, under body.....		
2	Dust guards.....	On wheels.....		
1	Filling funnel, cylinder.....	In store wagon.....		
3	Oil cans, 5-gallon.....	On store wagon, in oil-can holders.....	IV	9
1	Paulin, 12 by 12 feet.....	On store wagon.....		
1	Slush brush.....	do.....		
	<i>Straps:</i>			
1	Crowbar.....	In strap fasteners.....	IV	3
2	Grip.....			
2	Paulin.....			
2	Spare wheel hub covers.....	In store wagon.....		
	<i>Tools and accessories for forge limber.</i>			
1	Ax.....	On limber, under chest.....	IV	9
3	Buckets, watering, canvas.....	On limber, in bucket holder.....		
2	Dust guards.....	On wheels.....	IV	3
1	Hatchet.....	In bracket on left of chest.....	IV	9

## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Tools and accessories for forge limber—Con.</i>			
1	Hub liner driving tool .....	In forge limber.....	IV	3
1	Lantern.....	On limber, in bracket on front of chest.....	IV	9
1	Lantern bracket pad .....	In lantern-bracket pad .....	IV	3
1	Neck yoke .....	On pole.....		
2	Oil cans, tubular.....	On limber, in supports under chest.....	IV	9
1	Paulin 12 by 12 feet.....	On limber chest as cushion.....		
1	Pickax.....	On limber foot rest .....		
1	Picket rope .....	On limber, in front of chest.....	IV	3
1	Pole prop .....	On limber, in fastenings under chain.....		
1	Shovel, short-handled.....	On limber, under chest.....	IV	9
2	Singletrees.....	Attached to doubletree.....	IV	3
	Straps:			
1	Ax.....	In strap fasteners.....		
3	Grip.....			
1	Hatchet.....			
4	Limber blanket, front.....			
4	Limber blanket, rear.....			
3	Paulin.....			
1	Pick handle.....			
1	Pick head.....			
4	Picket rope, upper.....			
4	Picket rope, lower.....			
1	Pole prop .....			
1	Shovel handle.....			
1	Sledge.....			
	<i>Tools and accessories for store limber.</i>			
1	Ax.....	On limber, under chest.....		
3	Buckets, watering, canvas.....	In bucket holder.....		
1	Cyclometer for 58-inch wheel.....	On axle of limber.....	IV	9
2	Dust guards.....	On wheels.....	IV	3
1	Hatchet.....	On limber in bracket.....	IV	9
1	Lantern.....	On limber, in bracket on chest front.....	IV	3
1	Lantern bracket pad .....	In brackets.....		
1	Neck yoke .....	On pole.....	IV	9
2	Oil cans, tubular.....	On limber, in supports.....		
1	Paulin, 12 by 12 feet.....	On limber chest as cushion.....	IV	3
1	Pickax.....	On limber foot rest .....		
1	Picket rope .....	On limber in front of chest.....	IV	9
1	Pole prop .....	In fastening under frame.....		
1	Shovel, short-handled.....	On limber, under chest.....	IV	9
2	Singletrees.....	Attached to doubletrees.....	IV	3
	Straps:			
1	Ax.....	In strap fasteners.....		
3	Grip.....			
1	Hatchet.....			
4	Limber blanket, front.....			
4	Limber blanket, rear.....			
3	Paulin.....			
1	Pick handle.....			
1	Pick head.....			
4	Picket rope, upper.....			
4	Picket rope, lower.....			
1	Pole prop .....			
1	Shovel handle.....			
1	Lantern strap.....			
	<i>Spare parts of accessories.</i>			
4	Ax helves.....	In store wagon.....	IV	9
2	Handles, shovel, long.....			
3	Handles, shovel, short.....			
4	Handles, hatchet.....			
4	Handles, pickax.....			
3	Padlocks, with chains, clevises and bolt snaps.....			
	<i>Sights and quadrants.</i>			
4	Front sights.....	In bracket.....	IV	3
4	Front-sight brackets, with holders.....	In fastenings, on cradle.....		
4	Rear-sight brackets, with shank sockets.....	In bracket.....		
4	Rear-sight shanks.....	In fastenings, on cradle.....		
4	Panoramic sights.....	In case on shield.....		
4	Range quadrants.....	In case on right side of trail.....		
4	Teat wrenches for panoramic sights.....	In case on shield.....		



## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Spare sights and quadrants.</i>			
1	Front sight, complete.....	In spare-sights chest, in battery wagon.	IV	3
1	Rear sight, complete.....			
1	Panoramic sight.....			
1	Range quadrant.....			
1	Teat wrench for panoramic sight.....			
	<i>Range-finding and fire-control equipment.</i>			
1 1	Aiming circle.....	On pack horse.....		
1 1	Aiming-circle case.....			
1 1	Aiming-circle tripod.....			
1 1	Aiming-circle tripod case.....			
2 10	Battery commander's ruler, wooden.....	In store limber.....		
2 2	Battery commander's telescope and mount, model of 1904 or 1905.....			
2 2	Battery commander's telescope case: Accessories carried in case—	In store limber.....		
	1 camel's-hair brush.....			
	1 pin wrench.....			
	1 screw driver.....			
	1 teat wrench.....			
2 2	Battery commander's telescope tripod.....			
2 2	Battery commander's telescope-tripod case.....			
1 1	Board, map and plotting.....	To be carried on 2-horse reel, when available.	V	1
2	Chains for time-interval recorder.....	In store limber.....		
5	Flashlights with hoods.....			
16	Flashlights without hoods.....	To be carried on 2-horse reel, when available.		
1 2	Prismatic compass.....			
1 2	Prismatic-compass tripod.....			
1 2	Prismatic-compass case.....			
1 2	Prismatic-compass tripod case.....	On fifth section caisson.....		
1 6	Protractors, xylonite, rectangular.....			
1 1	Ruler for solution of triangles.....	On pack horse.....		
1 1	Observation tower.....			
1 1	Adjustment bar.....	On caisson.....		
1 1	Range finder, 1-meter base, model of 1916.....			
1 1	Range-finder case.....	In store limber.....		
1 1	Range-finder tripod.....			
1 1	Range-finder tripod case.....			
1 1	Reel for caisson.....			
1	Tape, steel, 100-feet.....			
2	Time-interval recorder.....			
	(Furnished by Signal Corps.) <sup>4</sup>			
	<i>Harness.</i>			
3 37	Lead, sets.....	On horses.....	IV	8
3 19	Wheel, sets.....			
56	Sacks.....	Not carried in field.....		
1	Reel, 2-horse.....	On instrument horse.....	IX	5
6 1	Pack harness, set.....	On saddle.....		
1	Stirrup, hooded, with guidon socket.....			
	<i>Special pack equipment.</i>			
1	Pack frame, model of 1911.....	On pack horse.....	IV	3
1	Hanger, 1 meter base range finder and B. C. telescope tripod.....			
1	Case rest.....			
1	Hanger, aiming circle and tripod and range finder, 1 meter base and tripod.....			

<sup>1</sup> Will be issued when available.<sup>2</sup> Metal battery commander's rulers with cases are no longer part of the equipment. Those on hand may be retained.<sup>3</sup> One on pack horse.<sup>4</sup> For list of these parts see Unit Accountability Equipment Manual.<sup>5</sup> One set is spare.<sup>6</sup> Consists of 1 aparejo, 1 aparejo cincha, 1 blinder, 1 corona, 1 crupper, 1 halter bridle, 1 lead rein, leather.



## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Spare parts of harness.</i>			
6	Breast straps.....	In battery wagon.....	IV	8
1	Bridle, Artillery, off.....			
1	Bridle, Artillery, near.....			
12	Cinchas, lead.....			
6	Cinchas, wheel.....	Not part of harness.....	IX	5
5	Collar pads, canvas.....			
8	Collar straps.....			
20	Curb bits.....			
20	Curb chain, with hooks.....	In battery wagon.....	IV	8
8	Feed bags.....			
8	Grain bags.....			
6	Halter headstalls.....			
20	Halter tie ropes.....	In battery wagon.....	IX	5
6	Martingales, with cincha straps.....			
4	Mogul springs, 320 pounds.....			
4	Side straps for breeching.....			
4	Steel collars, with 2 hame tugs each.....	In battery wagon.....	IV	8
12	Stirrup straps.....			
8	Traces, lead, with chain.....			
4	Traces, wheel.....			
4	Whips, Artillery.....			
	<i>Spare parts of collars.</i>			
6	Bolts for bottom of collar.....	In miscellaneous spare-parts chest, store wagon.	IV	8
6	Bolts for extension.....			
6	Bolts for top connection.....			
6	Bolts for trace plate.....			
2	Buckle latches.....	Carried loose.....	IV	8
6	Buckle springs.....			
4	Draft springs.....			
6	Pad bolts.....			
6	Pad hooks, with collar back-strap connection.....	In miscellaneous spare-parts chest.....	IV	8
6	Nuts for bottom bolt.....			
6	Nuts for extension bolt.....			
6	Nuts for top connection bolt.....			
6	Nuts for pad bolt.....	In miscellaneous spare-parts chest.....	IV	8
6	Nuts for trace-plate bolt.....			
2	Trace plate and loop.....			
6	Washers for trace-plate bolt.....			
	<i>Instruction equipment.</i>			
1	Sectionalized shell.....	Not carried in field.....	V	4
1	Sectionalized shrapnel.....			
	<i>Miscellaneous equipment.</i>			
1	Reloading and cleaning outfit, consist- of—	In chest for reloading and cleaning outfit, in store wagon.	V	5
	1 bushing.....			
	1 cleaning brush (16.75 inches long).....			
	1 case holder.....			
	1 case-holder stand.....			
	1 decapping tool (17.9 inches long).....			
	1 hammer.....			
	1 primer-inserting press, small.....			
	1 saluting-powder measure.....			
	1 storage chest.....			
4	Subcaliber and drill cartridge kit, consist- ing of—	Not carried in field.....	V	5
	3 drill cartridges, 1 extra base.....			
	1 subcaliber cartridge.....			
	1 bristle cleaning brush.....			
	1 cleaning rod.....			
	2 closing cap set screws.....			
	1 extension piece.....			
	2 extractor springs.....			
	2 extractor-spring screws.....			
	1 eyepiece.....			
	1 graduated ring, with felt washer.....			
	4 ring screws.....			
	6 rotating pins.....			
	6 stop pins.....			
	1 storage chest.....			
	1 wrench pin.....			

## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 cais- sons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Miscellaneous equipment—Continued.</i>			
1	Pistol-cleaning kit.....	Where convenient.....	X	9
2	Arm racks for automatic pistols..... (For targets, see O. O. Pamphlet No. 1994.)		X	1
	<i>Ammunition.<sup>1</sup></i>			
696	Shrapnel, H. E., rounds, or.....	In ammunition chests.....	VI	3
464	Shrapnel, rounds, and.....			
232	Shell, rounds.....			
	<i>Personal equipment.</i>			
	The equipment of the enlisted men of Field Artillery is as follows:			
	(a) For each enlisted man—			
1	Can, bacon.....	Carried by man.....	IX	1
1	Canteen, model of 1910.....	do.....		
1	Canteen cover, dismounted.....	do.....		
21	Cartridges, ball, pistol, or 20 cartridges, ball, revolver.....	do.....	VIII	2
1	Cup, model of 1910.....	do.....	IX	1
1	Knife.....	do.....		
1	Fork.....	do.....		
2	Magazines, pistol, extra, if pistol is used.....	do.....	VII	2
1	Meat can.....	do.....	IX	1
1	Pistol or revolver.....	do.....	VII	2
1	Pistol belt or revolver cartridge belt without saber ring.....	do.....	IX	3
1	Pistol holster or revolver holster.....	do.....		
1	Spoon.....	do.....	IX	1
1	Pouch for first-aid packet.....	do.....		
	Packet, first-aid (Medical De- partment). Furnished by Quartermaster Corps—			
1	Identification tag.....	do.....		
1	Shelter-tent half.....	do.....		
1	Shelter-tent pole.....	do.....		
5	Shelter-tent pegs.....	do.....		
	(b) For each enlisted man individu- ally mounted, in addition to (a)—			
1	Currycomb.....	Carried on horse.....	IX	5
1	Horse brush.....	do.....		
1	Link.....	do.....	IX	2
1	Saddle, McClellan, Fieldartil- lery.....	do.....		
1	Saddlebags, pair.....	do.....	IX	2
1	Spurs, pair.....	On man.....		
1	Spur straps, set.....	do.....	IX	5
1	Bridle, Field Artillery.....	Carried on horse.....		
	(c) For each driver, in addition to (a)—			
1	Currycomb.....	do.....	IX	5
1	Horse brush.....	do.....		
1	Spurs, pair.....	Carried by man.....	IX	2
1	Spur straps, set.....	do.....		
	(d) Dismounted men (including cannoneers when not mounted) in addition to (a)—			
1	Can, condiment.....	do.....	IX	1
1	Haversack, model of 1910.....	do.....		
	<i>Horse equipment for each horse.</i>			
1	Halter tie rope.....	Carried on horse.....	IX	5
1	Halter headstall.....	do.....		
1	Feed bag.....	do.....		
1	Grain bag.....	do.....		

<sup>1</sup> No ammunition is carried in gun limbers.<sup>2</sup> Saddles to be equipped with 1 stirrup guldion socket per battery.<sup>3</sup> Until the model of 1910 haversack is supplied, the haversack (old model) and 2 canteen-haversack straps may be used.<sup>4</sup> Part of harness for all draft horses.

## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Horse equipment for each horse—Contd.</i>			
1	Saddle blanket.....	Carried on horse.....	IX	5
1	Surcingle.....	do.....		
1	Horse cover.....	Not carried in field.....		
	For spare horse:			
1	Feed bag.....	Carried on horse.....		
1	Grain bag.....	do.....		
1	Halter headstall.....	do.....		
1	Saddle blanket.....	do.....		
1	Surcingle.....	do.....		
	<i>Saddler's tools.</i>			
12	Awl blades, harness, assorted Nos. 43 to 48, inclusive.....	In saddler's chest in battery wagon....	X	9
1	Awl, pegging.....	do.....		
1	Awl, seat, handled.....	do.....		
1	Carriage, pricking, 3 wheels.....	do.....		
1	Compass, 6 inches.....	do.....		
1	Creaser, double, lignum-vitæ.....	do.....		
1	Claw tool.....	do.....		
1	Edge tool, No. 1.....	do.....		
1	Edge tool, No. 2.....	do.....		
2	Extra blades with followers for draw gage.....	do.....		
1	Gauge, draw, brass.....	do.....		
1	Hammer, riveting, No. 3.....	do.....		
1	Handle, peg, awl, with wrench.....	do.....		
1	Knife, round.....	do.....		
1	Knife, splitting, 6-inch.....	do.....		
1	Needle case, leather.....	do.....		
1	Needle, gloves' No. 3, paper.....	do.....		
2	Needles, harness, No. 4, papers.....	do.....		
2	Needles, harness, No. 5, papers.....	do.....		
2	Needles, harness, No. 6, papers.....	do.....		
12	Needles, sacking, assorted.....	do.....		
1	Nipper, cutting, 10-inch.....	do.....		
1	Oilstone, unmounted.....	do.....		
1	Pliers, 6-inch.....	do.....		
4	Punches, hand, round, assorted.....	do.....		
1	Punch, revolving.....	do.....		
1	Rivet set.....	do.....		
1	Rule, boxwood, 2-foot, 4-fold.....	do.....		
1	Screw driver, 3-inch blade.....	do.....		
1	Sewing palm, leather.....	do.....		
1	Shears, 10-inch bent trimmers.....	do.....		
1	Shoe knife, square point.....	do.....		
1	Shoe knife, broad point.....	do.....		
1	Slicker, steel.....	do.....		
2	Thimbles.....	do.....		
1	Stitching clamp.....	do.....		
1	Tool kit, sheepskin.....	do.....		
1	Supply chest, tools.....	do.....		
	<i>Carpenter's tools.</i>			
1	Bench ax.....	In carpenter's chest, in battery wagon...	X	9
2	Bags, canvas, for small stores.....			
1	Bevel, 8-inch.....			
6	Bits, auger.....			
1	Bit, wood, countersink.....			
1	Bit, expansive, two cutters.....			
3	Bits, screw driver.....			
1	Brace, ratchet, 10-inch sweep.....			
3	Chisels, socket, framing.....			
1	Dividers, wing, 10-inch.....			
4	Drills, twist.....			
1	File, 10-inch, flat, bastard.....			
6	Files, saw, 4 and 6 inch (3 of each).....			
1	Gage, marking, brass, thumbscrew shoe and face.....			
2	Gouges, socket firmer.....			
1	Hammer, claw, adze eye.....			
1	Handle, tool, containing 10 tools.....			

1 Part of harness for all draft horses.



## Statement of total equipment of one 3.8-inch gun battery—Continued.

War footing (4 guns, 12 caissons).	Article.	Where carried.	Property classification.	
			Class.	Section.
	<i>Carpenter's tools—Continued.</i>			
2	Handles, file, aluminum alloy .....	In carpenter's chest, in battery wagon..	X	9
1	Knife, drawing, 9-inch blade .....			
1	Mallet, 2 $\frac{3}{4}$ by 5 inches, maple, hickory handled .....			
1	Nail set .....			
1	Oiler .....			
1	Oilstone, unmounted .....			
1	Pincer, small, 8-inch .....			
1	Plane, jack, wood .....			
1	Plane, smoothing, wood .....			
1	Plate, auger handle .....			
1	Rasp, wood, 10-inch .....			
1	Reamer, half round, for wood or soft metal .....			
1	Rule, boxwood, 2-foot, 4-fold .....			
1	Saw, crosscut, 24-inch .....			
1	Saw, rip, 24-inch .....			
1	Saw set .....			
1	Screw driver, 5-inch blade, 10-inch .....			
1	Spokeshave, adjustable .....			
1	Square, steel, 12-inch body, 8-inch tongue .....			
1	Tape line, linen .....			
1	Vise, table, 24-inch .....			
1	Wrench, screw, 12-inch .....			
	<i>Blacksmith's tools.</i>			
1	Anvil, 100-pound .....	In forge limber chest .....	X	9
2	Aprons, blacksmith .....			
2	Bags, canvas, for nails .....			
1	Box, shoeing, leather .....			
1	Chisel, cold, 8-inch .....			
1	Chisel, handled, for cold iron, 2 pounds .....			
1	Chisel, handled, for hot iron, 1.5 pounds .....			
1	Clinching iron .....			
6	Drills, flat .....			
1	File, 12-inch, flat, bastard .....			
1	Fire rake .....			
1	Fire shovel .....			
1	Flatter, handled, 1.5 inch, square face .....			
1	Fore punch and creaser .....			
1	Forge, Empire, portable .....			
1	Hammer, hand, 2 pounds .....			
1	Hammer, riveting, 1 pound, 2 ounces .....			
1	Hammer, shoeing, 10 ounces .....			
1	Handle, file, aluminum .....			
1	Hardie, 0.75 square shank, 1.25 bit .....			
1	Cutting nippers, 14-inch .....			
1	Oiler .....			
1	Pritchel, 0.75 flats, 9-inch .....			
1	Punch, round, 0.375-inch .....			
1	Punch, round, 0.312 ( $\frac{5}{16}$ )-inch .....			
1	Punch, nail .....			
1	Punch, square .....			
1	Ratchet drill for square shank drill .....			
5	Rivet sets, 5 sizes .....			
1	Rule, boxwood, 2-foot, 4-fold .....			
1	Screw plates, taps and dies, with tap wrench, including chest .....			
2	Shoeing knives .....			
1	Shoeing pincers .....			
1	Shoeing rasp, 16-inch .....			
1	Sledge, 11-pound .....			
1	Square .....			
1	Toe knife .....			
1	Tongs, horseshoer's, 1.5-pound, 12-inch .....			
1	Tongs, for 0.25 iron .....			
1	Tongs, for 0.5 iron .....			
1	Whetstone, farrier's, 10-inch .....			
1	Wrench, forge .....			
1	Wrench, screw, 12-inch .....			

## Statement of total equipment of one 3.8-inch gun battery—Continued.

Horse battery.	Light battery.*	Article.	Where carried.	Property classification.	
				Class.	Section.
		<i>Materials for cleaning and preservation. (6 months' supply, all expendable.)</i>			
5	5	Borax, pounds, lump.....	In store wagon.....		
1	1	Brush, camel's hair, No. 1, round.....	do.....		
3	3	Brushes, sash, No. 3.....	do.....		
3	3	Brushes, sash, No. 5.....	do.....		
1	1	Brush, varnish, No. 4-0.....	do.....		
2	2	Brushes, varnish, No. 5-0.....	do.....		
2	2	Brushes, varnish, No. 6-0.....	do.....		
2	2	Burners, lantern, Dietz, Vesta.....	do.....		
2	2	Cloth, crocus.....	quires.....		
1	1	Cloth, emery, No. 1.....	quire.....		
1	1	Cloth, emery, No. 0.....	do.....		
1	1	Cloth, emery, No. 00.....	do.....		
2	2	Cosmic, No. 80, soft, quarts (1-quart cans).....	do.....		
2	2	Chamois skins.....	do.....		
4	3	Dressing, russet leather.....	boxes.....		
21	21	Eveready tungsten battery No. 793.....	do.....		
6	6	Eveready 2.7V. Mazda bulb No. 1197.....	do.....		
2	2	Globes, lantern.....	do.....		
17	7	Lavaline, 16-ounce cans.....	do.....		
25	25	Lye, powdered, cans, 1-pound.....	5 pounds in store wagon; rest to be retained at post.		
20	15	Naphthaline.....	pounds.....		
1	1	Oil, clock, ounce, 1-ounce bottles.....	In cleaning material and small-stores chest.		
5	5	Oil, hydroline, gallons, 5-gallon cans.....	In oil cans under battery and store wagons.		
6	6	Oil, linseed, boiled.....	gallons.....		
1	1	Oil, linseed, raw.....	pints.....		
15	15	Oil, lubricating.....	gallons.....		
20	20	Oil, neat's-foot.....	do.....		
5	5	Oil, slushing, light.....	do.....		
5	5	Oil, coal.....	do.....		
2	2	Oil, sperm.....	do.....		
75	75	Paint, olive-drab, second coat.....	pounds.....		
75	75	Paint, olive-drab, third coat.....	do.....		
5	5	Paint, rubberine, gallons, 1-gallon cans.....	Not carried in field.....		
5½	5½	Petrolatum (vaseline), ounces (in tin box).....	In cleaning material and small-stores chest.		
17	7	Po'ish, Gibson's soap, 16-ounce cans.....	In store wagon.....		
6	6	Primer, brown enamel.....	quarts.....		
75	75	Sal soda, pounds, bulk.....	In store at post.....		
1	1	Sandpaper, No. 2½.....	quires.....		
1	1	Sandpaper, No. 1½.....	do.....		
1	1	Sandpaper, No. ½.....	do.....		
1	1	Sandpaper, No. 00.....	do.....		
72	52	Soap, castile.....	pounds.....		
6	4	Soap, H & H, cakes or "Paco".....	do.....		
100	80	Soap, saddle, Frank Miller's, pounds, 1-pound tins.....	do.....		
100	65	Sponges, 5-inch.....	35 in store wagon; rest to be retained at post.		
10	10	Sponges, large size, 5½ or 6 inch.....	In store wagon.....		
8	8	Turpentine.....	gallons.....		
40	40	Waste, cotton, pounds, white.....	10 pounds in store wagon; rest to be retained at post.		
5	5	Wicks, lantern, size 0.....	In cleaning-material chest.....		
1	1	Tape, black adhesive, ¾-inch wide, ½-pound roll.....	In store wagon.....		

\* Only one of these items will be issued to an organization.

## Statement of total equipment of one 3.8-inch gun battery—Continued.

Horse battery.	Light battery.	Article.	Where carried.	Property classification.	
				Class.	Section.
		<i>Saddler's material. (6 months' supply, all expendable.)</i>			
6	6	Awl blades, harness, assorted.....	In saddler's chest.....	X	9
1	1	Awl haft, patent, No. 146, with wrench.....	do.....		
3	2	Buckles, bar, 1-inch, Saalbach, bronze.....	In canvas bag for small stores, battery wagon.....	X	10
8	8	Buckles, bar, tongueless, $\frac{3}{4}$ -inch, brass.....	do.....		
21	13	Buckles, bar, tongueless, 1-inch, brass.....	do.....		
6	5	Buckles, bar, tongueless, $1\frac{1}{4}$ -inch brass.....	do.....		
40	30	Buckles, center bar, $\frac{1}{2}$ -inch, bronze.....	do.....		
12	6	Buckles, center bar, $\frac{1}{2}$ -inch, bronze.....	do.....		
12	9	Buckles, center bar, $\frac{1}{2}$ -inch, bronze.....	do.....		
3	2	Buckles, center bar, 1-inch, bronze.....	do.....		
12	10	Buckles, center bar, $1\frac{1}{4}$ -inch, M. I.....	do.....		
12	10	Buckles, center bar, $1\frac{1}{4}$ -inch, M. I.....	do.....		
8	7	Buckles, roller, $\frac{3}{4}$ -inch, M. I.....	do.....	X	10
2	2	Buckles, roller, $\frac{3}{4}$ -inch, M. I.....	do.....		
15	15	Buckles, roller, $\frac{1}{2}$ -inch, M. I.....	do.....		
4	4	Buckles, roller, 1-inch, M. I.....	do.....		
50	46	Buckles, roller, $1\frac{1}{4}$ -inch, M. I.....	do.....		
3	3	Buckles, roller, $1\frac{1}{4}$ -inch, M. I.....	do.....		
6	6	Buckles, satchel, $\frac{1}{2}$ -inch, M. I.....	do.....		
6	3	Buckles, wire, $\frac{1}{2}$ -inch, bronze.....	do.....		
3	1	Buckles, wire, $\frac{1}{2}$ -inch.....	do.....		
36	24	Buckles, wire, $\frac{1}{2}$ -inch, brass.....	do.....		
3	3	Buckles, roller, Royal, $1\frac{1}{4}$ -inch, M. I.....	do.....	IX	5
6	3	Cheek "D," bronze.....	do.....		
11	11	Conway loop, $\frac{1}{2}$ -inch, bronze.....	do.....		
25	20	Duck, cotton, olive-drab, 22-inch, No. 1, yards.....	do.....		
12	12	End buckle, 1-inch, bronze, with clip.....	do.....		
25	22	End clip, $\frac{3}{4}$ -inch, brass.....	do.....		
30	12	End clip, 1-inch, brass.....	do.....		
30	21	End clip, $1\frac{1}{4}$ -inch, brass.....	do.....		
12	9	Foot staple, high, bronze.....	In saddler's chest.....		
24	18	Foot staple, low, bronze.....	do.....		
12	9	Foot staple, semicircular, bronze.....	do.....	IV	8
4	4	Hook, back strap, steel.....	In canvas bag for small stores, battery wagon.....		
2	2	Hook, breast strap, steel.....	do.....	IX	1
4	4	Hook, collar strap, steel.....	do.....		
6	10	Hook, double, brass wire.....	In saddler's chest.....	IX	5
6	10	Hook, end, brass wire.....	do.....	IX	5
2	2	Hook, side strap, steel.....	In canvas bag for small stores, battery wagon.....	IV	8
3	2	Hook, wire (for link), brass.....	do.....	IV	5
6	4	Leather, bridle, backs.....	In battery wagon.....		
6	5	Leather, collar, backs.....	do.....	X	10
160	150	Leather, harness, backs, pounds.....	do.....		
1	1	Leather, latigo, sides.....	do.....	X	9
10	8	Nails, saddle, $\frac{1}{2}$ -inch head, $1\frac{1}{4}$ inches long.....	In saddler's chest.....		
1	1	Needles, gloves, No. 3.....	do.....	X	9
1	1	Needles, harness, No. 4.....	do.....		
1	1	Needles, harness, No. 5.....	do.....	IX	5
1	1	Needles, harness, No. 6.....	do.....		
10	8	Ornaments, brow band, copper.....	do.....	IX	5
10	8	Ovals, saddle.....	do.....		
5	3	Ovals, saddle bag.....	do.....	X	10
1	1	Pins, screw, brass, $\frac{1}{4}$ -inch, No. 2, 1-gross packages.....	do.....		
10	6	Ring, $\frac{1}{2}$ inch diameter (saddle bag), bronze.....	do.....	X	5
4	4	Ring (rifle scabbard), 1 inch diameter, M. I.....	do.....		
24	18	Ring, $1\frac{1}{4}$ inches diameter (saddle), bronze.....	do.....	IX	5
3	3	Ring, $1\frac{1}{4}$ inches diameter (back strap), M. I.....	do.....		
6	5	Ring, $1\frac{1}{4}$ inches diameter (throat strap), M. I.....	do.....	X	10
3	3	Ring, $1\frac{1}{4}$ inches diameter (breaching), M. I.....	do.....		



## Statement of total equipment of one 3.8-inch gun battery—Continued.

Horse bat- tery.	Light bat- tery.	Article.	Where carried.	Property classifica- tion.	
				Class.	Sec- tion.
		<i>Saddler's material. (6 months supply, all expendable)—Continued.</i>			
12	10	Ring, 2 inches diameter (halter), M. I.	Small stores bag, battery wagon... In saddler's chest.....		
12	6	Ring, 4 inches diameter (quarter strap)			
8	8	Ring D, 1 inch diameter (feed bag), M. I.			
6	6	Ring D, 1½ inches diameter, with clasp, steel.			
3	3	Ring D, 1½ inches diameter, steel.	do.	X	1
3	3	Ring D, 2 inches diameter (special), steel.	do.		
1	1	Rivets and burrs, brass, ¾-inch, No. 12, pounds, belt.	do.		
1	1	Rivets and burrs, brass, ½-inch, No. 10, pounds, belt.	do.		
1	1	Rivets and burrs, brass, ¾-inch, No. 10, pounds, belt.	do.		
1	1	Rivets and burrs, brass, 1-inch, No. 8, oval heads, pounds.	do.		
3	3	Rollers, lead rein, steel.	do.		
1,600	1,200	Rope, ¾-inch (halter), feet, manila hemp.	In battery wagon.	IV	8
1	1	Screws, brass, 1-inch, No. 6, wood, gross.	In saddler's chest.	X	10
15	10	Sheepskins with wool on.	In battery wagon.		
2	1	Shields, saddle, 11-inch, brass.	In saddler's chest.		
2	1	Shields, saddle, 11½-inch, brass.	do.		
4	3	Shields, saddle, 12-inch, brass.	do.	IX	5
5	3	Snap hook, canteen, Cavalry, bronze.	do.		
2	2	Snap hook, coverts, ¾-inch, M. I.	do.		
2	2	Snap, covert, 1-inch, M. I.	do.		
3	2	Snap, German, ¾-inch, M. I., bronzed.	do.	X	10
3	5	Snap hook, haversack, 1-inch.	do.	IX	1
6	5	Snap, swivel, 1-inch, No. 16, M. I.	do.	X	10
8	8	Snap, German, 1-inch, M. I., bronzed.	do.		
36	28	Square, halter, M. I.	In canvas bag for small stores, bat- tery wagon.		
2	2	Strap loop, coupling, ¾-inch (for bri- dle), brass.	do.		
8	8	Strap loop, feed bags, 1 by ½ inch, brass wire.	do.	IX	5
3	3	Stud hook, bronze.	do.		
6	5	Studs, saddle bag, bronze.	In saddler's chest.		
1	1	Tacks, copper, No. 12, ½-pound paper.	do.		
1	1	Tacks, copper, No. 20, ½-pound paper.	do.		
1	1	Thimble, aluminum lined, steel, size ¾-inch.	do.		
1	1	Thread, carpet, No. 18, olive-drab, pounds.	do.		
2	1	Thread, shoe, No. 3, brown.	do.		
2	1	Thread, shoe, No. 10, brown.	do.		
2	2	Wax, stitching, brown.	In battery wagon.		
20	16	Webbing, olive-drab, cotton, heavy, ¾-inch.	do.		
35	28	Webbing, olive-drab, cotton, heavy, 1-inch.	do.		
15	11	Webbing, olive-drab, halter, 1½-inches, yards.	do.	X	10
20	14	Webbing, jute, ¾-inch.	do.		
		<i>For polo equipment.</i>			
2	2	Buckles, wire, ¾-inch, bronze.	In saddler's chest.		
2	2	Buckles, wire, ¾-inch, bronze.	do.		
12	12	Buckles, wire, ¾-inch, bronze.	do.		
4	4	Buckles, wire, ¾-inch, bronze.	do.		
2	2	Buckle, nickel-plated, stirrup strap, 1½-inch, bronze.	do.		
6	6	Buckle, nickel-plated, girth, 1-inch, bronze.	do.		
4	4	Ring, ¾-inch, bronze.	do.		
5	5	Web, linen straining, ¾-inch.	In battery wagon.		
7	7	Web, linen straining, 5-inch.	do.		

## Statement of total equipment of one 3.8-inch gun battery—Continued.

No.	Article.	Where carried.	Property classification.	
			Class.	Section.
Reserve supplies for war service. <sup>1</sup>				
3	Buckles, bar, tongueless, $\frac{1}{2}$ -inch, brass.....	In store.....	X	10
5	Buckles, bar, tongueless, 1-inch, brass.....	do.....		
10	Buckles, center bar, $\frac{1}{2}$ -inch, bronze.....	do.....		
3	Buckles, center bar, $\frac{1}{2}$ -inch, bronze.....	do.....		
3	Buckles, center bar, $\frac{1}{2}$ -inch, bronze.....	do.....		
3	Buckles, center bar, $\frac{1}{2}$ -inch, M. I.....	do.....		
3	Buckles, center bar, $\frac{1}{2}$ -inch, M. I.....	do.....		
2	Buckles, roller, $\frac{1}{2}$ -inch, M. I.....	do.....		
5	Buckles, roller, $\frac{1}{2}$ -inch, M. I.....	do.....		
12	Buckles, roller, $\frac{1}{2}$ -inch, M. I.....	do.....		
10	Buckles, wire, $\frac{1}{2}$ -inch, M. I.....	do.....		
2	Burners, lantern.....	do.....		
1	Cheek "D".....	do.....		
1	Chamois s'in.....	do.....		
4	Conway loops, $\frac{1}{2}$ -inch.....	do.....		
3	Dressing, russet leather.....	do.....		
4	End buckles.....	do.....		
2	Globes, lantern.....	do.....		
2	Hooks, back strap.....	do.....		
2	Hooks, collar strap.....	do.....		
3	Hooks, double, brass wire.....	do.....		
3	Hooks, end, brass wire.....	do.....		
2	Leather, bridle, back s.....	do.....		
2	Leather, collar, backs.....	do.....		
30	Leather, harness..... pounds.....	do.....		
1	Leather, latigo..... side.....	do.....		
3	Nails, saddle.....	do.....		
1	Oil, cloot..... ounce.....	do.....		
4	Oil, coal..... gallons.....	do.....		
4	Oil, hydroline.....	do.....		
12	Oil, lubricating.....	do.....		
16	Oil, neat's-foot.....	do.....		
2	Oil, slushing, light.....	do.....		
1	Oil, sperm..... gallon.....	do.....		
3	Ornaments, brow band.....	do.....		
2	Rings, $\frac{1}{2}$ -inch diameter, saddle bag.....	do.....		
8	1 $\frac{1}{2}$ -inch diameter, saddle.....	do.....		
4	Rings, 2-inch diameter, halter.....	do.....		
3	Rings, 4-inch diameter, cincha strap.....	do.....		
3	Rings, 4-inch diameter, quarter strap.....	do.....		
3	Rings "D," 1-inch diameter, feed bag.....	do.....		
1	Rivets and burrs, $\frac{1}{2}$ -inch, brass, No. 10, pound.....	do.....		
1	Rivets and burrs, $\frac{1}{2}$ -inch, brass, No. 10, pound.....	do.....		
18	Sal soda..... pounds.....	do.....		
2	Snap hook, haversack, 1-inch.....	do.....		
3	Snap hook, feed bag.....	do.....		
12	Squares, halter.....	do.....		
40	Soap, castile..... pounds.....	do.....		
3	Soap, H and H, ca'es or Paco.....	do.....		
60	Soap, saddle, Frank Miller's..... pounds.....	do.....		
25	Sponges, 5-inch.....	do.....		
2	Strap loops, feed bag.....	do.....		
2	Studs, saddle bag.....	do.....		
1	Tacks, copper, 12-ounce..... paper.....	do.....		
1	Tacks, copper, 20-ounce.....	do.....		
1	Thread, carpet, No. 18, olive-drab, pound.....	do.....		
1	Thread, shoe, No. 3, brown.....	do.....		
1	Thread, shoe, No. 10, brown.....	do.....		
25	Waste, cotton.....	do.....		
1	Wax, stitching, brown.....	do.....		
2	Wicks, lantern, size 0.....	do.....		
Ammunition.				
See general orders pertaining to annual allowance of ammunition.				

<sup>1</sup> No material will be drawn from this supply for making repairs and replacements except in sudden calls for field service if necessary to replace missing items of the regular supplies. To avoid deterioration, all perishable articles should be replaced by similar ones received with the regular 6 months' allowance.

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